Course descriptions

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COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-101/22	Algebraic Geometry

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 2.

Educational level: II.

Prerequisites:

Recommended prerequisites:
none

Course requirements:
Written solution of problems and their consulting 60%/oral exam with written preparation 40%
Grading: A 90%; B 80%; C 70%; D 60%; E 50%
Scale of assessment (preliminary/final): Weight of the course work / exam: 60/40

Learning outcomes:
The student gains an overview of the basic concepts of algebraic geometry as well as the most common computational methods there.

Class syllabus:
- ideals and varieties in affine space, Hilbert's basis theorem
- Nullstellensatz
- elements of algebraic geometry:
- Zariski topology,
- coordinate rings, morphisms and rational maps
- computational methods of algebraic geometry: Gröbner bases

Recommended literature:

- Reid: Undergraduate algebraic geometry, Cambridge University Press, 1998
- Igor. R. Šafarevič: Basic algebraic geometry 1, Springer-Verlag, 2013
- A. Gathmann: Class Notes „Algebraic Geometry", online skriptá, 2014
- Brendan Hassett: Algebraic geometry, Cambridge University Press, 2007
- David Cox, John Little, Donal O'Shea: Ideals, Varieties and Algorithms, Springer Verlag, 1996
- Justin R. Smith: Introduction to Algebraic Geometry, Five Dimensions Press, 2014

Languages necessary to complete the course:
english

Notes:
none

Past grade distribution
Total number of evaluated students: 4

A	B	C	D	E	FX
25,0	25,0	0,0	0,0	25,0	25,0

Lecturers: RNDr. Jana Chalmovianská, PhD., doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-264/22	Algebraic Geometry for Teachers

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 6.

Educational level: I., II.

Prerequisites:

Course requirements:
Written solution of problems and their consulting 100%
Grading: A 90%, B 80%, C 70%, D 60%, E 50%

Learning outcomes:
The student gets familiar with some topics in classical algebraic geometry.

Class syllabus:
- conic sections in the real/complex affine/projective plane
- the group of an elliptic curve
- unsolvability of classical problems of ancient Greek mathematics
- Grassmannian as a generalization of projective space
- enumerative geometry
- lines on a cubic surface

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: RNDr. Jana Chalmovianská, PhD., doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-UDG-322/22	Applications of Descriptive Geometry

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 5.

Educational level: I., II.

Prerequisites:

Course requirements:
The student can get 50% of available points for exercises and 50% for the final exam. The student must obtain at least half of the points for the exercises in order to pass to the final exam.
During the semester, the student can obtain points for written and technical drawing assignments, to successfully obtain the preliminary assessment, he / she needs to obtain at least half of the available points.
The final exam consists of a written (40%) and an oral part (10%). If the student does not get half of the points for the written part of the final exam, he / she is not admitted to the oral part and is graded Fx. Upon successful completion of the written part of the exam, participation in the oral part of the final exam is voluntary.
Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): Preliminary assessment 50% (written homework and technical drawing assignments) / 50% final exam (40% written part + 10% oral part).

Learning outcomes:
The graduate is familiar with the applications of descriptive geometry in special representations. Gaines an overview of the applications of descriptive geometry in geodesy, cartography, topography, construction and fine arts.

Class syllabus:
Linear perspective. Perspective axonometry. Relief perspective. Geometric foundations of photogrammetry. Geometric foundations of cartography. Topography.

Recommended literature:
Konštruktívna geometria pre technikov / Václav Medek, Jozef Zámožík. Bratislava : Alfa, 1978
Geometrické základy konštruktívnej fotogrametrie / Gabriel Čeněk. Bratislava : Slovenská vysoká škola technická, 1951
Deskriptivní geometrie : díl 2 / Karel Drábek, František Harant, Ota Setzer. Praha : Státní nakladatelství technické literatury, 1979
Aplikácie matematiky a geometrie v kartografii / Darina Stachová. Acta Math.12, UKF Nitra

Metódy zobrazovania v geodézii a kartografii / Margita Vajsáblová. Sborník příspěvků z 30. konference o matematice na VŠTEZ a 16. konference studentů na VŠTEZ: 15.-17. září 2008, Lázně Bohdaneč. Dostupné na https://mat.fsv.cvut.cz/komisevstez/30vstez/sbornik/vajsablova_30_vstez.pdf
Lineární perspektiva. Fotogrammetrie / Jana Braňková, Aleš Jehlička, Tomáš Novák. Elektronická skripta. Fakulta architektury ČVUT Praha, 2014. Dostupné na http://15122.fa.cvut.cz/?page=cz,elektronicka-skripta

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 2

A	B	C	D	E	FX
50,0	0,0	0,0	50,0	0,0	0,0

Lecturers: Mgr. Adriana Malovec Bosáková, PhD., Mgr. Ľudovít Balko, PhD., doc. RNDr. Andrej Ferko, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/2-MXX-133/23	Artificial Intelligence for Everyone

Educational activities:
Type of activities: training session / course
Number of hours:
per week: 9 **per level/semester:** 1t / 117
Form of the course: on-site learning

Number of credits: 6

Recommended semester:

Educational level: I.II., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 22

A	B	C	D	E	FX
45,45	36,36	4,55	9,09	4,55	0,0

Lecturers: prof. Ing. Igor Farkaš, Dr.

Last change:

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-UDG-221/22	CAD System-supported Technical Drawing

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

Course requirements:
For the semester, the student can get 50% for exercises and 50% for the final exam. To successfully pass the final exam, the student must obtain at least half of the points for the exercises. The final exam is only oral, continuous assessment is in the form of projects and homework.
Evaluation: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).

Learning outcomes:
Students will learn the basic rules of displaying and dimensioning objects according to applicable technical standards. They get acquainted with the applications of projection methods in technical practice, the reconstruction of technical objects from projections and also sections and cross-sections of objects in technical practice. They will learn the basic workflows in CAD systems QCAD, SketchUp, Sweet Home 3D and FreeCAD.

Class syllabus:
Technical drawing – a historical look at its development.
Technical standardization, STN and ISO standards, technical drawings, sizing rules.
Projection methods in technical practice for mechanical, electrical and construction drawings.
Sections and cross sections according to the STN standard.
Basic attributes of an automated construction system.
Drawing simple shapes in QCAD, dimensioning, hatching, creating blocks and manipulating blocks, working with layers.
Advanced QCAD functions – trimming, smooth arcs joining, working with text, editing dimension marks, etc.
Basics of working in SketchUp, description of the layout and application settings.
Use various tools to create simple objects in SketchUp.
An overview of interesting SketchUp extensions for creating more complex objects.
Basics of working in the Sweet Home 3D application when designing the interior of rooms.
Extensions of the Sweet Home 3D application, creation of sloping walls and roofs, multi-storey buildings, work with lights, materials setting, importing your own textures and objects.
Basics of working in FreeCAD. Layout description, creating simple objects.

Recommended literature:

Marie Kargerová: Deskriptivní geometrie pro technické školy vysoké, vyšší a střední. Ostrava, 1997
Ján Tarbajovský, Pavol Fedor: Technické kreslenie. Alfa, 1990
Štefan Glézl, Milan Srnánek: Strojnícke kreslenie (2.vydanie). Bratislava, ALFA 1978
Jiří Špaček, Michal Spielmann: AutoCAD – Názorný průvodce pro verze 2019 a 2020, Computer Press, 2020
Róbert Bohdal: CAD systémy, https://flurry.dg.fmph.uniba.sk/webog/sk/bohdal-vyucba/52-bohdal/85-cad-systemy, 2020

Languages necessary to complete the course:

Notes:

Past grade distribution

Total number of evaluated students: 1

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: RNDr. Róbert Bohdal, PhD., doc. RNDr. Andrej Ferko, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-145/22	Computer Geometry (1)

Educational activities:
Type of activities: course
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:
Homeworks during the term.
Oral exam
Evaluation: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Students who complete this course will learn an algorithmic approach to solving computational geometry problems in the plane. They will be able to construct methods and their modifications for various areas of discrete geometry and analyze them in terms of computational complexity.

Class syllabus:
Polygons, polygon triangulation, the art gallery problem. Fundamentals of computational complexity analysis of algorithms. Convex hulls, algorithms for their creation (incremental, gift wrapping, Graham's scan, divide and conquer). Triangulation of sets of points, their properties and algorithms for their construction (triangle splitting, incremental). Flip graphs and their properties. Voronoi diagrams, their properties and algorithms (incremental, Fortune's). Delaunay triangulations and their connection to Voronoi diagrams.

Recommended literature:
Satyan L. Devadoss, Joseph O'Rourke. Discrete and computational geometry. Princeton University Press, 2011.
Pavel Chalmovianský, Andrej Ferko, Roman Galbavý. Zložitosť geometrických algoritmov.. Univerzita Komenského, 2001.
Jörg-Rüdiger Sack, Jorge Urrutia. Handbook of computational geometry. Elsevier, 1999.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 4

A	B	C	D	E	FX
75,0	0,0	25,0	0,0	0,0	0,0

Lecturers: RNDr. Barbora Pokorná, PhD., doc. RNDr. Andrej Ferko, PhD., Mgr. Marcel Makovník, PhD.

Last change: 11.09.2025

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-146/22	Computer Geometry (2)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:
Homeworks during the term.
Oral exam.
Evaluation: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
The students know the mathematical descriptions of curves and surfaces used in geometric modeling. They master the tools and methods for evaluation of curves, surfaces, and spline constructions. They know the mathematical descriptions of surfaces and curves used in geometric modeling.

Class syllabus:
Hermite curves, Bézier curves, properties of blending functions, curve modeling, and evaluation algorithms. Geometric and parametric continuity. Generation of interpolation splines (Hermite spline, cardinal spline) and approximation splines (Bézier spline, Beta spline, B-spline). Geometric creation and analytical description of surfaces determined by boundary curves (Coons and Hermite patches) and control nets (Bezier surfaces, B-spline surfaces). Partial derivatives, twist vectors in modeling and joining surfaces. Rational extension of the mathematical description of curves (rational Bézier curves, NURBS curves) and surfaces (rational Bézier surfaces, NURBS surfaces). Shaping parameters - weights - in curve and surface modeling. Conic sections as rational curves. Evaluating algorithms for rational curves and surfaces.

Recommended literature:
Duncan Marsh. Applied geometry for computer graphics and CAD. . Springer Science & Business Media, 2005.
Gerald Farin. Curves and surfaces for computer-aided geometric design: a practical guide.. Elsevier, 2014.
Przemysław Kiciak. Geometric continuity of curves and surfaces. . Morgan & Claypool, 2017.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 3

A	B	C	D	E	FX
66,67	33,33	0,0	0,0	0,0	0,0

Lecturers: RNDr. Barbora Pokorná, PhD., doc. RNDr. Andrej Ferko, PhD., Mgr. Marcel Makovník, PhD.

Last change: 11.09.2025

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-266/22	Computer Graphics for Teachers

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 5.

Educational level: II.

Prerequisites:

Course requirements:
For the semester, the student can get 100% for continuous assessment in the form of independent work on individual projects.
Evaluation: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).

Learning outcomes:
After completing the course, students will be able to create and edit complex bitmap or vector drawings and 3D models and their animations in multiplatform Open Source programs Gimp, Inkscape and Blender. Such images, drawings and possibly 3D models are often part of the final documents such as thesis.

Class syllabus:
1. Creating simple graphics, logos and animations using a graphics tablet in GIMP.
2. Advanced editing of photos (working with layers, masks, etc.) and scanned documents, overview of interesting extensions in Gimp.
3. Creating vector graphics using various tools in Inkscape.
4. Advanced tools (tile clones, filters, transformations) and the use of Inkscape extensions to create more complex vector artwork.
5. Creating simple 3D objects using standard tools. Setting up materials, lights, scenes, surroundings and cameras in Blender.
6. Use of spline surfaces and lattice deformation in the creation of 3D animal models.
7. Creating simple animations of a realistic-looking scene.
8. Creating an animated character using a skeleton and modifying the animation curves in Blender.

Recommended literature:
Josef Vybíral: GIMP – Praktická uživatelská příručka. Computer Press, 2008
Lubomír Čevela: Digitální fotografie v programu GIMP. Computer Press, 2012
Petr Šimčík: Inkscape – Praktický průvodce tvorbou vektorové grafiky. Computer Press, 2013
Dmitry Kirsanov: The Book of Inkscape (2nd Edition), No Starch Press, 2021
Tavmjong Bah: Inkscape – Guide to a Vector Drawing Program (4th Edition). Prentice Hall, 2011
Pavel Pokorný: Blender – Naučte se 3D grafiku. BEN - technická literatura, 2009

Jason van Gumster: Blender For Dummies (4th Edition). Wiley, 2020

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: RNDr. Róbert Bohdal, PhD., doc. RNDr. Andrej Ferko, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-105/22	Computer Modeling and Measurement from the Perspective of Educational Psychology

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 3.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: 2 micro-appearances in front of the audience, evaluation of micro-appearances of classmates
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will develop the ability to use the resources of a computer-assisted science laboratory in teaching their approbation subjects in primary and secondary school. They will be able to plan the student's activity and the teacher's activity in the student's experiment, they will be able to use the CMA Coach science laboratory system and they will be able to evaluate the students' work in this laboratory.

Class syllabus:
student-supported guided research in science subjects, research teaching methods, interface, sensors, measurement with sensors, computer control (programming in Coach language), basics of laboratory safety, measurement of physical quantities and processing of measured values, measurement with sensors in chemistry teaching and biology, the use of the CMA Coach system in students' hobby work (within non-formal education), basic rules for the creation of instructional materials for students

Recommended literature:
Computer Aided Science Laboratory / Peter Demkanin et al .. Bratislava: Knižničné a edičné centrum, 2006
Evidence based teaching: A practical approach / Geoff Petty. Cheltenham: Nelson Thornes, 2006
Modern teaching: practical guide / Geoffrey Petty; translated from English by Štěpán Kovařík. Prague: Portal, 1996
Own electronic texts of the subject published through the subject's website.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 19

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Peter Demkanin, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-124/22	Consultations on Methodology for the Final Work

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 4.

Educational level: II.

Prerequisites:

Recommended prerequisites:
Methodology of pedagogical research

Course requirements:
individual work during the semester, focused on the research part of the diploma thesis - depending on the type of research and after a personal agreement with the teacher (60%) - min. 3 individual consultations
Exam: comprehensive research chapter of the future diploma thesis (40%)
Assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 60 / 40

Learning outcomes:
The student:
- deepen their knowledge of the basic stages and methods of empirical research of educational phenomena related to their research topic of the diploma thesis
- design, implement and evaluate at least part of the research problem of their thesis
- write a comprehensive chapter in his diploma thesis on research activities

Class syllabus:
Course contents:
- Repetition of the basics of qualitative and quantitative research, processing and interpretation of empirical data.
- Implementation of procedures and selection of appropriate research techniques.
- Acquiring field data collection skills and solving related problems.
- Evaluation and consultation of the analysis of research results.
- Submission and presentation of the final work.

Recommended literature:
own electronic texts published on the website, resp. in the Moodle environment
Qualitative research in pedagogical sciences / Švaříček, Roman and Klára Šeďová. Prague: Portal, 2007

Methods of pedagogical research: basics of quantitative research / Chráska, Miroslav. Prague: City, 2007
Guide to Qualitative Research Methodology / Peter Gavora. Bratislava: Comenius University, 2007
Basics of pedagogical-psychological research for student teachers / Martin Skutil et al .. Prague: Portal, 2011
Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research / John W. Creswell. Pearson 2011

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 54

A	B	C	D	E	FX
64,81	14,81	3,7	3,7	1,85	11,11

Lecturers: doc. Mgr. Karolína Miková, PhD., PaedDr. Tünde Kozánek Kiss, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-124/22	Consultations on Methodology for the Final Work

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3., 5.

Educational level: II.

Prerequisites:

Recommended prerequisites:
Methodology of pedagogical research

Course requirements:
individual work during the semester, focused on the research part of the diploma thesis - depending on the type of research and after a personal agreement with the teacher (60%) - min. 3 individual consultations
Exam: comprehensive research chapter of the future diploma thesis (40%)
Assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 60 / 40

Learning outcomes:
The student:
- deepen their knowledge of the basic stages and methods of empirical research of educational phenomena related to their research topic of the diploma thesis
- design, implement and evaluate at least part of the research problem of their thesis
- write a comprehensive chapter in his diploma thesis on research activities

Class syllabus:
Course contents:
- Repetition of the basics of qualitative and quantitative research, processing and interpretation of empirical data.
- Implementation of procedures and selection of appropriate research techniques.
- Acquiring field data collection skills and solving related problems.
- Evaluation and consultation of the analysis of research results.
- Submission and presentation of the final work.

Recommended literature:
own electronic texts published on the website, resp. in the Moodle environment
Qualitative research in pedagogical sciences / Švaříček, Roman and Klára Šeďová. Prague: Portal, 2007

Methods of pedagogical research: basics of quantitative research / Chráska, Miroslav. Prague: City, 2007
Guide to Qualitative Research Methodology / Peter Gavora. Bratislava: Comenius University, 2007
Basics of pedagogical-psychological research for student teachers / Martin Skutil et al .. Prague: Portal, 2011
Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research / John W. Creswell. Pearson 2011

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 54

A	B	C	D	E	FX
64,81	14,81	3,7	3,7	1,85	11,11

Lecturers: doc. Mgr. Karolína Miková, PhD., PaedDr. Tünde Kozánek Kiss, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KDMFI/1-UXX-344/22	**Course title:** Creation of Educational Materials for Students with Special Educational Needs

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3., 5.

Educational level: I., II.

Prerequisites:

Course requirements:
Interim evaluation: Active participation, problem solving, participation in discussions (90%), project elaboration (10%)
An exam: -
Indicative evaluation scale: e.g. A 90%, B 80%, C 70%, D 65%, E 60%

Learning outcomes:
The student:
- gain first-hand experience of how people with SEN perceive the world and how they work with a computer and a web browser
- get acquainted with the problems of users of alternative software and hardware
- learns about problem elements and aspects of the site
- get acquainted with examples of good and bad practice
- gain experience in testing the accessibility of electronic documents

Class syllabus:
- Accessibility of electronic document.
- Visually impaired users.
- Hearing impaired users.
- Users with physical disabilities.
- Users with cognitive impairments.
- Users of alternative devices.
- Accessibility of textual content
- Accessibility of multimedia content
- Accessibility of dynamic content
- Accessibility testing methods

Recommended literature:
- own electronic texts published on the website, resp. in the Moodle environment
- Špinar, D.: We create accessible websites; Zoner Press, 2004, 360 p.

- Bezáková, D. et al .: Data Creation and Presentation, Bratislava: Center for Scientific and Technical Information of the Slovak Republic, 2020, ISBN 978-80-89965-67-0.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Ľudmila Jašková, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-132/22	Cross-curricular Projects Focused on the Problems of Today's World

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 4.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: Active participation in classes (50%), design and implementation of a project with the implementation of a cross-cutting theme (50%).
An exam: -
Indicative evaluation scale: e.g. A 90%, B 80%, C 70%, D 60%, E 50%
Weight of the mid-term / final evaluation: e.g. 100/0
Scale of assessment (preliminary/final): 100 / 0

Learning outcomes:
The student:
- is able to include cross-cutting themes in the teaching of their subject in an appropriate way (especially environmental, multicultural, regional and media education),
- learn about the possibilities of connecting approbation subjects in the form of project teaching,
- gets ideas and inspirations for interdisciplinary projects.

Class syllabus:
- Cross-cutting themes according to the official curriculum and the possibilities of their implementation in various subjects.
- Topics found in the intersection of various subjects.
- Authentic learning aimed at solving real problems of life.
- Design and implementation of a project with the implementation of a cross-cutting theme.
- Presentation of the results of the implemented project.

Recommended literature:
- own electronic texts published on the website, resp. in the Moodle environment
- Cárová, T. and Kohanová, I. 2012. Global primary school education - mathematics - methodical manual. [online] Slovak AID, Human at Risk, 2012. ISBN: 978-80- 970900-4-3 Available on the Internet: https://globalnevzdelavanie.sk/globalne-vzdelavanie-na-zs-matematika/
- Kireš. M., Ješková, Z., Ganajová, M., Kimáková, K. Research activities in science education. Bratislava: ŠPÚ, 2016.

- outputs from the IT academy project, where digital technologies are implemented in various subjects.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Ľudmila Jašková, PhD., doc. PaedDr. Peter Vankúš, PhD., doc. PaedDr. Klára Velmovská, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

STATE EXAM DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAG/2-UDG-953/22	**Course title:** Descriptive Geometry and Didactics of Descriptive Geometry
Number of credits: 3	
Educational level: II.	

State exam syllabus:

A1 Orthogonal projections (to one plane, Monge's projection, axonometry, topography) - principles, basic construction, applications.
A2 Skew projections (to one plane, skew axonometry) - principles, basic construction, applications.
A3 Central projections (central projection, linear perspective, perspective axonometry) - principles, basic construction, applications.
A4 Perspective affinity and its using as a tools in solving problems in descriptive geometry. Plane intersection of prismatic and circle cylindrical surface.
A5 Perspective collineation and its application to solve problems in descriptive geometry. Plane intersection of the pyramid and the circular cone.
A6 Geometric base of photogrametry. Internal and external orientation of a scan. Reconstruction from one orthogonal and one skew image.
A7 Classification and principles of cartographic projections (planar, cylindrical, conic, other). Planar cartographic projections (orthographic, stereographic, gnomonic).
A8 CAD systems as a tool for creating and work with technical drawings (principles, standards and practical use).
A09 Torsion of a curve. Frenet's formulas.
A10 Singular points of planar curves.
A11 The first fundamental form of a surface and computation of the lengths, angles and area on a surface.
A12 Dupin's indicatrix and conjugate directions in the tangent plane of a surface.
A13 Principal directions and curvatures of a surface, Weingarten mapping.
A14 Gaussian curvature of surfaces.
A15 Ideals in commutative rings (particularly in rings of polynomials).
A16 Affine and projective algebraic varieties. Associated ideal of an algebraic variety.
A17 Zariski's topology. Decomposition of algebraic variety into irreducible components.
A18 Coordinate ring variety. Morphisms and rational varieties.
A19 Ordering of monomes in polynomial rings. Algorithm of division, Gröbner's base ideal, calculations in algebraic geometry, applications of Gröbner base.
A20 Quadratic surfaces of revolution. Basic problems of descriptive geometry on quadratic surfaces of revolution.
A21Helix and its properties. Construction of the tangent, osculation plane and center of curvature in projections methods.
A22 Quadratic surfaces, definition, constructions, basic properties. Ruled surfaces, non-ruled surfaces, their affine classification (ellipsoids, paraboloids, hyperboloids).
A23 Developable surfaces, constructions and applications in technical practice. Helicoid surface as a developable surface. Construction, properties and developing into a plane.

A24 Non-developable ruled surfaces. Chasles theorem and its applications (conoids, helicoid). Tangent plane of non-developable ruled surfaces.
A25 Helicoid surfaces. Linear and cyclic helicoid surfaces. A helicoid as a conoid.
A26 Non-ruled surfaces of technical practice (wedge, sum, cyclical). Basic properties and examples of their application.
A27 Hermit and Bezier segment, their properties and evaluation algorithms.
A28 Hermit cubic splines - construction, properties, examples of endpoint conditions.
A29 B-spline curves, knot sequence, construction, modeling of B-spline curves.
A30 Beta-spline curves, continuity conditions, properties of a segment, modeling of a curve.
A31 Construction of rational curves, rational Bézier curves and their modeling.
A32 Surfaces determined by the boundary conditions - Coons patches. Construction and mathematical description of ruled, bilinear and bicubic patches.
A33 Tensor product surfaces, properties of Bézier bicubic patch.
B01 Applying didactic principles in teaching of descriptive geometry.
B02 Organization of curriculum plans and creation of curriculum topics in descriptive geometry.
B03 Applications of education methods in descriptive geometry.
B04 Specifics of problem solutions in descriptive geometry (complete solution, construction problems).
B05 Steps and tools of development of spatial imagination.
B06 Development of logical reasoning. Complete sorting with examples in descriptive geometry.
B07 Education in descriptive geometry (axioms, definitions, theorems).
B08 Functions and techniques of proving in descriptive geometry.
B09 Organizational forms of education in descriptive geometry at schools.
B10 Descriptive geometry and modern means of education.

Last change: 16.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-111/22	Didactics of Descriptive Geometry (1)

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:
The student can get 40% for exercises and 60% for the final exam. The student must obtain at least half of the points for the exercises in order to pass to the final exam.
During the exercises, the student has the opportunity to obtain points evaluation for written and technical drawing assignments. To successfully obtain continuous assessment, he / she needs at least half of the available points.
The final exam consists of an oral part, where the student draws several questions. Unsolicited supplementary questions may also be asked to clarify the assessment.
Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): Preliminary assessment 40% (written homework and technical drawing assignments) / 60% final exam (oral).

Learning outcomes:
The graduate will acquire specialized didactic training for teaching descriptive geometry at secondary schools, thanks to theoretical lectures and modeled exercises.

Class syllabus:
Historical development stages of descriptive geometry. The importance of didactics of descriptive geometry. Curriculum, syllabi, thematic plans. Concepts of teaching descriptive geometry. Analysis, synthesis, deduction, induction in teaching descriptive geometry. Conceptual process - axioms, sentences, definitions in terms of teaching descriptive geometry. Teaching proofs in descriptive geometry.

Recommended literature:
Matematika pre gymnázia 5 / Václav Medek, Alica Sivošová. Bratislava : Slovenské pedagogické nakladateľstvo, 1979
Metodika vyučovania deskriptívnej geometrie a rysovania / František Hradecký ...[et al.]. Bratislava : Univerzita Komenského, 1969
Teória vyučovania matematiky 2 / Milan Hejný ... [et al.]. Bratislava : Slovenské pedagogické nakladateľstvo, 1990

Languages necessary to complete the course:

Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 3

A	B	C	D	E	FX
33,33	33,33	33,33	0,0	0,0	0,0

Lecturers: RNDr. Martina Bátorová, PhD., doc. RNDr. Andrej Ferko, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-113/22	Didactics of Descriptive Geometry (2)

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:
The student can get 40% for exercises and 60% for the final exam. The student must obtain at least half of the points for the exercises in order to pass to the final exam.
During the exercises, the student has the opportunity to obtain points evaluation for a project. To successfully obtain continuous assessment, he / she needs at least half of the available points.
The final exam consists of an oral part, where the student draws several questions. Unsolicited supplementary questions may also be asked to clarify the assessment.
Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): Preliminary assessment 40% exercises (project) / 60% final exam (oral).

Learning outcomes:
The course graduate expands their theoretical preparation for teaching descriptive geometry at secondary schools. Masters the theory of didactic situations with respect to teaching of descriptive geometry.

Class syllabus:
Principles of teaching descriptive geometry. Preparation for a lesson in descriptive geometry, types of lessons, organization of teaching descriptive geometry. Use of computer in teaching descriptive geometry. Basic concepts of the theory of didactic situations with respect to didactics of descriptive geometry. Problem teaching, open problems, problem solving. Teaching of Monge's projection in high school. Teaching conic sections and technical curves in high school. Selected applications of descriptive geometry in high school (cartography, topography, theoretical solution of roofs, penetration of basic bodies, etc.). Empirical semestral research project in the didactics of descriptive geometry.

Recommended literature:
Metodika vyučovania deskriptívnej geometrie a rysovania / František Hradecký ...[et al.]. Bratislava : Univerzita Komenského, 1969
Matematika pre gymnázia 5 / Václav Medek, Alica Sivošová. Bratislava : Slovenské pedagogické nakladateľstvo, 1979

Teória vyučovania matematiky 2 / Milan Hejný ... [et al.]. Bratislava : Slovenské pedagogické nakladateľstvo, 1990

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 3

A	B	C	D	E	FX
33,33	66,67	0,0	0,0	0,0	0,0

Lecturers: RNDr. Martina Bátorová, PhD., doc. RNDr. Andrej Ferko, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

STATE EXAM DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KDMFI/2-UMA-951/15	**Course title:** Didactics of Mathematics
Number of credits: 3	
Educational level: II.	
Learning outcomes: The graduate will be ready to perform the tasks assigned to a beginning math teacher.	
Class syllabus: State final examination in the scope of master's study of mathematics didactics. The student should be able to include the task in the thematic unit, identify preconceptions and the necessary knowledge to solve it, determine the skills that the student will learn on it, respectively. concepts that allows you to discover. The student will demonstrate a model solution, point out problematic places in the solution with which students could have problems and how he would react to them as a teacher. After completing the task, the student should outline the activities that would follow and how he would close the lesson.	
State exam syllabus: 1. Logic and sets Logic (propositions, operations with propositions, logical conjunctions and quantifiers), sets (number of elements of unification of two and three sets, De Morgan's formulas for complement of unification and intersection), proofs and conclusions (direct and indirect proofs, proofs by dispute, mathematical induction, mode ponens, modus tollens). 2. Numbers, variables, numerical fields Binomial theorem and Pascal's triangle, derivation of formulas a^n-b^n (including geometric interpretation for n = 2 and n = 3). 3. Number theory Number of prime numbers, relation of largest common divisor and smallest common multiple of two numbers, prime decomposition number of number divisors, irrationality of the square root of a prime number, derivation of divisibility criteria 4, 5, 10, 100, 3, 6, 9. 4. Equations, inequalities and their system Geometric interpretation of a system of two linear equations with two unknowns, conditions for the existence of solutions, equivalent and non-equivalent modifications and their relation to basic functions. 5. Function and its properties Basic transformations of function graphs, definitions of basic properties of functions (domain of definition, domain of values, increasing and decreasing, extrema and local extrema - sharp and fuzzy, examples), inverse function and its graph. 6. Linear and quadratic function Significance of coefficients k and q in the formula of the linear function y = kx + q, geometric meaning of the directive, quadratic function (derivation of the relation for calculating roots, coordinates of the vertex of the parabola . 7. Arithmetic and geometric sequence, infinite (geometric) series Basic relationship management.	

8. Polynomials, power functions and linear polynomials
Root factors and their relation to the roots of a polynomial equation, square roots as inverse functions to power functions, definition of a rational power of a positive number, linear polynomial function (derivation of asymptote equations and conditions why $ad \neq bc$).
9. Exponential and logarithmic functions
Exponential functions (definition of power for natural, integer and rational exponent, basic properties of exponential function and their justification, simple and compound interest, regular deposits and withdrawals, loan repayments), definition of logarithm, rules for calculating logarithms and their connection with creation of exponential function , relationships between logarithms with different bases.
10. Trigonometric functions
Definition of trigonometric functions in a right triangle and using a unit circle and their mutual relation, values of trigonometric functions for basic angles, accounting formulas, formulas for double and half angle, relations for sum and difference of trigonometric functions.
11. Triangle
Consistency and similarity of triangles, Pythagorean and Euclidean theorems, different relations for the content of a triangle (Heron's formula, using sinus of angle, radius of inscribed and described circle), derivation of statements about intersections of angles, axes of sides, lines, heights, sine and cosine theorem.
12. Parallelograms and trapezoid
Derivation of formulas for the content of parallelograms and trapezoids, derivation of some of their properties the diagonals of a quadrilateral with sides a, b, c, d are perpendicular to each other just when $a2 + c2 = b2 + d2$).
13. Circle
Formula for the content of a circle and a paragraph, size in degrees and radians, center and circumferential angle, Tales' theorem, estimation of the number π using written and described n-gons, related to trigonometric functions.
14. Analytical geometry in the plane and in space
Vectors and operations with them, scalar product and its relation to the angle of two vectors, analytical expression of a line and a plane, various equations of a line, derivation of coordinates of the center of a line and a dividing line in a given ratio, center of a triangle, size of a line, derivation of a formula lines and from the plane, angle of two lines (using scalar product, using directives), angle of line and plane, normal vector.
15. Sets of points of given properties and their analytical expression
Derivation of "basic" sets of points of a given property (including a set of points from which a line can be seen at a given angle).
16. Conic sections
Definitions of conic sections (circle, ellipse, hyperbola and parabola) as sets of points of given properties and derivation of their equations.
17. Suitable and similar representations, construction tasks
Examples of design tasks solved by a combination of calculation and construction, the use of sets of points of given properties in design tasks, examples of design tasks solved using identical and similar representations.
18. Basic ways of displaying space in a plane
Basic properties of parallel projection, hint of their justification, linear perspective and its basic properties, layers and their basic properties.
19. Linear formations in space - positional problems
Use of basic statements about the intersections of a pair of parallel ones planes with another plane when constructing sections of bodies by a plane.

20. Solids
Cavalieri's principle and its application e.g. to calculate the volume of a sphere, a formula for calculating the volume of pyramids and cones, the idea of justifying the formula for the surface of a sphere.
21. Combinatorics
Combinatorial identities, basic combinatorial rules (sum, product), typical examples of their use, derivation of formulas for the number of variations, combinations, permutations (also with repetition), combinatorial derivation of basic relations in the Pascal triangle (symmetry, sum of minor elements).
22. Probability
Statistical and Laplace definition of probability, dependent and independent events, calculation of probability for independent events, geometric probability and an example of its use.
23. Statistics
Statistical set and position measures (modus, median, mean), basic properties of the arithmetic mean (sum of deviations from the mean is equal to 0), various possibilities of describing the "scatter" of the set, Chebyshev's inequality.

Languages necessary to complete the course:
slovak, english

Last change: 17.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-104/22	Didactics of Mathematics (1)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II., N

Prerequisites:

Course requirements:
Continuous assessment: group homework, reading of scientific articles, discussion of articles and the specified topic, group work on a lesson plan described for each group in the assignment.
The student must obtain at least 50% of the continuous assessment and each assignment must be evaluated with a non-zero number of points.
Final evaluation: oral exam, individual preparation of a lesson plan and its presentation
Indicative assessment scale: A 94%, B 86%, C 79%, D 70%, E 60%, Fx <60%
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
The student will gain an overview of didactic theories, will be able to critically evaluate them and use the appropriate methods and forms. Through activities at the seminar, they will acquire modern teaching techniques that are a prevention of formal knowledge and misconceptions in mathematics. The study of scientific and research articles and the subsequent discussion or authentic experience will give graduates a better insight into the issues of inclusive school, creating preparations for the lesson (or sequence) and asking "good questions".

Class syllabus:
The language of mathematics, its historical development and didactic significance. A parallel between phylogeny and ontogeny of mathematical thinking. Conceptual and cognitive process in mathematics. Principles, means and forms of teaching in mathematics. Objectives of the teaching process in mathematics. Learning theories. Lesson preparation and its starting points. Resources and their use in preparation, during teaching in evaluation. Hypothetical learning trajectories.

Recommended literature:
Dítě, škola a matematika: Konstruktivistické přístupy k vyučování / Milan Hejný, František Kuřina. Praha : Portál, 2001
Moderní vyučování / George Petty Praha : Portál, 1993
Dvacet pět kapitol z didaktiky matematiky / Milan Hejný, Jarmila Novotná, Naďa Stehlíková (Eds.) Praha, 2004

Komunikácia v inkluzívnej škole / Marta Horňáková. Bratislava: Univerzita Komenského v Bratislave. 2017
Elementary and Middle School Mathematics: Teaching Developmentally. / John A. Van de Walle, Karen Karp, Jennifer M. Bay-Williams. Pearson.
Theory of didactical situations in mathematics /Guy Brousseau. Springer, 1997
Textbook explanations: Modes of reasoning in 7th grade Israeli mathematics textbooks. / Silverman B, and Even R., CERME 9. Charles University in Prague. Faculty of Education. 2015, pp.205-212
Od obsahu vzdělávání k žákově znalosti: Kritická místa na cestě do školy a ze školy / T. Janik, Arnica 8, 2018, 1–8. Západočeská univerzita v Plzni, Plzeň.
Refining teacher design capacity: Mathematics teachers' interactions with digital curriculum resources / Birgit Pepin, Ghislaine Gueudet, Luc Trouche. In. ZDM Mathematics Education, 2017, 49, 799–812 https://doi.org/10.1007/s11858-017-0870-8
Own electronic materials published via the subject's website (eg course in LMS Moodle)

Languages necessary to complete the course:
slovak, englihs

Notes:

Past grade distribution
Total number of evaluated students: 229

A	B	C	D	E	FX
85,15	9,61	3,49	0,87	0,0	0,87

Lecturers: doc. PaedDr. Mária Slavíčková, PhD.

Last change: 15.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-105/22	Didactics of Mathematics (2)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 4.

Educational level: II., N

Prerequisites:

Course requirements:
Continuous assessment: individual preparation of a lesson plan and its placement in the thematic plan, microteaching, preparation of written tests (2 equal groups), peer assessment, didactic analysis of teaching texts, reading and discussion of scientific articles.
The student must obtain at least 50% of the continuous assessment and each assignment must be evaluated with a non-zero number of points.
Exam: written with oral consultation
Indicative assessment scale: A 94%, B 86%, C 79%, D 70%, E 60%, Fx <60%
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
The graduate of the course is acquainted with the goals of mathematics education at lower secondary school, with adequate teaching methods, forms and means, with ways of introducing selected mathematical concepts, is ready for his work in school and out of school, can transfer to pedagogical practice knowledge and skills acquired in individual professional disciplines. The study of scientific and research articles with a subsequent discussion or an authentic experience will give graduates a better insight into the cognitive and affective components of mathematics teaching at lower secondary school.

Class syllabus:
Specifics of teaching mathematics for individual topics and concepts of mathematics at lower secondary school: educational goals, activities, the assumption of the development of student understanding in the context of educational activities and the creation of a hypothetical trajectory. Selection of adequate methods, forms and age-appropriate activities for teaching mathematics at the second stage of primary school. Integration of digital technologies into the teaching of mathematics also in order to support argumentation, reasoning, and building a mathematical culture (correctness of concepts, procedures, arguments, etc.).

Recommended literature:
Dítě, škola a matematika: Konstruktivistické přístupy k vyučování / Milan Hejný, František Kuřina. Praha : Portál, 2001

Moderní vyučování / Geoffrey Petty. Praha : Portál, 1993
Is this a coincidence? The role of examples in fostering a need for proof / Buchbinder, O., Zaslavsky, O., ZDM Mathematics Education 43, 269 (2011). https://doi.org/10.1007/s11858-011-0324-7
Elementary and Middle School Mathematics: Teaching Developmentally. / John A. Van de Walle, Karen Karp, Jennifer M. Bay-Williams. Pearson. 2012
Strategies for Teaching Fractions: Using Error Analysis for Intervention and Assessment / David B. Spangler.
Dvacet pět kapitol z didaktiky matematiky / Milan Hejný, Jarmila Novotná, Naďa Stehlíková (Eds.) Praha, 2004
Dostupné učebnice Matematiky pre 5. – 9. ročník ZŠ a nižšie ročníky osemročných gymnázií / Ján Žabka, Pavol Černek / Ondrej Šedivý a kol. / Soňa Čeretková a kol. / Milan Hejný a kol.
Nový Pomocník z matematiky (5. – 9. ročník) / Iveta Kohanová a kol.
Own electronic materials published via the subject's website (eg course in LMS Moodle)

Languages necessary to complete the course:
slovak, enghlish

Notes:

Past grade distribution
Total number of evaluated students: 194

A	B	C	D	E	FX
65,46	17,53	12,37	3,09	1,03	0,52

Lecturers: doc. PaedDr. Mária Slavíčková, PhD., doc. PaedDr. Peter Vankúš, PhD.

Last change: 17.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-106/22	Didactics of Mathematics (3)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 5.

Educational level: II., N

Prerequisites:

Course requirements:
Continuous assessment: individual preparation of a lesson plan and its placement in the thematic plan, microteaching, preparation of written tests (2 equal groups), peer assessment, didactic analysis of teaching texts, reading and discussion of scientific articles.
The student must obtain at least 50% of the continuous assessment and each assignment must be evaluated with a non-zero number of points.
Exam: written with oral consultation
Indicative assessment scale: A 94%, B 86%, C 79%, D 70%, E 60%, Fx <60%
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
The graduate of the course is acquainted with the goals of mathematics education at upper secondary schools, with adequate teaching methods, forms and means, with ways of introducing selected mathematical concepts, is ready for his work at school and outside school, can transfer to pedagogical practice knowledge and skills acquired in individual professional disciplines. Specially, the graduate of the course will gain an overview of didactic procedures for teaching mathematics suitable for the transition from lower to upper secondary school and in the first years of upper secondary school.

Class syllabus:
Specifics of the last year of lower secondary school, transition to the 1st year of upper secondary school. Appropriate activities of teaching mathematics for individual topics of the first and second year of upper secondary school: educational goals, activities, the assumption of the development of student understanding in the context of educational activities and the creation of their hypothetical scenario. Selection of adequate methods, forms and cognitively appropriate activities. Integration of digital technologies into the teaching of mathematics also in order to support argumentation, reasoning, and building a mathematical culture (correctness of concepts, procedures, arguments, etc.).

Recommended literature:

Dítě, škola a matematika: Konstruktivistické přístupy k vyučování / Milan Hejný, František Kuřina. Praha : Portál, 2001
Moderní vyučování / Geoffrey Petty Praha : Portál, 1993
Dvacet pět kapitol z didaktiky matematiky / Milan Hejný, Jarmila Novotná, Naďa Stehnlíková (Eds.) Praha, 2004
Thinking mathematically / John Mason, Leone Burton, Kaye Stacey. Pearson, 2010
Explanation and Proof in Mathematics. Philosophical and Educational Perspectives / G. Hanna, H. N. Jahnke, H. Pulte (Eds.), Springer 2010
Matematika a svet okolo nás : Zbierka úloh / Zbyněk Kubáček ... [et al.]. Bratislava : Pavol Cibulka, 2008
Učebnice matematiky pre gymnáziá / Zbyněk Kubáček
Matematika : 1 : zbierka úloh pre stredné školy / Iveta Kohanová ... [et al.]. Bratislava : Orbis Pictus Istropolitana, 2011
Own electronic materials published via the subject's website (eg course in LMS Moodle)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 193

A	B	C	D	E	FX
66,32	19,69	9,33	2,07	2,59	0,0

Lecturers: doc. PaedDr. Mária Slavíčková, PhD., doc. PaedDr. Peter Vankúš, PhD.

Last change: 15.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-107/22	Didactics of Mathematics (4)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 6.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: individual preparation of a lesson plan and its placement in the thematic plan, microteaching, preparation of written tests (2 equal groups), peer assessment, didactic analysis of teaching texts, reading and discussion of scientific articles.
The student must obtain at least 50% of the continuous assessment and each assignment must be evaluated with a non-zero number of points.
Exam: written with oral consultation
Indicative assessment scale: A 94%, B 86%, C 79%, D 70%, E 60%, Fx <60%
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
The graduate of the course will gain an overview of didactic procedures in the teaching of mathematics at upper secondary school and in the preparation of students for the school-leaving examination in mathematics, in extracurricular activities. The described activities of the educational process are focused on the creative use of knowledge from mathematics acquired during the study.

Class syllabus:
Selected activities for teaching mathematics on the topics of the third and fourth year of high school (for graduates and non-graduates): educational goals, activities, the assumption of the development of student understanding in the context of educational activities and the creation of hypothetical trajectories.

Recommended literature:
Učebnice matematiky pre gymnáziá / Zbyněk Kubáček
Matematika : 1 : zbierka úloh pre stredné školy / Iveta Kohanová ... [et al.]. Bratislava : Orbis Pictus Istropolitana, 2011
Seminár z matematiky, časti 1 – 3 / Zbyněk Kubáček, Ján Žabka
Explanation and Proof in Mathematics. Philosophical and Educational Perspectives / G. Hanna, H. N. Jahnke, H. Pulte (Eds.), Springer 2010
Thinking mathematically / John Mason, Leone Burton, Kaye Stacey. Pearson, 2010
Maturitné testy z matematiky /nucem.sk

Own electronic materials published via the subject's website (eg course in LMS Moodle)

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 52

A	B	C	D	E	FX
82,69	11,54	3,85	1,92	0,0	0,0

Lecturers: doc. PaedDr. Mária Slavíčková, PhD., doc. PaedDr. Peter Vankúš, PhD.

Last change: 17.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/2-UMA-259/22	Didactics of Mathematics in Praxis (1)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: II.

Prerequisites:

Course requirements:
Ongoing evaluation: homeworks
Indicative rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will be prepared for the situations they will experience in the reality of teaching mathematics at the second primary education stage. They will know various teaching techniques, methods of interpretation, working with the textbook as well as supplementary materials, various forms of written and oral examinations, as well as methods of correcting children's solutions. They will learn to distinguish which statements help students and which harms them.

Class syllabus:
Demonstrations of a transmissive and constructivist way of leading a lesson. Error preview. Textbook as a teacher's aid. Textbook as a student aid. (Topics will be documented in the curriculum of the second primary education stage).

Recommended literature:
Aj geometria naučila človeka myslieť / Milan Hejný. Bratislava : Slovenské pedagogické nakladateľstvo, 1990
Analýza řešení slovních úloh : Kapitoly z didaktiky matematiky. / Jarmila Novotná.. Praha : Univerzita Karlova,, 2000.
Dítě, škola a matematika : Konstruktivistické přístupy k vyučování / Milan Hejný, František Kuřina. Praha : Portál, 2001
Teória vyučovania matematiky 2 / Milan Hejný ... [et al.]. Bratislava : Slovenské pedagogické nakladateľstvo, 1990

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 119

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., Mgr. Lucia Šimová

Last change: 15.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/2-UMA-260/15	Didactics of Mathematics in Praxis (2)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 6.

Educational level: II.

Prerequisites:

Course requirements:
Ongoing evaluation: homeworks
Indicative rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will be prepared for the situations they will experience in the school reality of teaching mathematics in secondary school. They will know various teaching techniques, methods of interpretation, working with the textbook as well as supplementary materials, various forms of written and oral examinations, as well as methods of correcting children's solutions. They will learn to distinguish which statements help students and which harms them.

Class syllabus:
Evaluation and classification. Preparations, analysis and corrections of written works and tests (topics will be documented in the secondary school curriculum).

Recommended literature:
Aj geometria naučila človeka myslieť / Milan Hejný. Bratislava : Slovenské pedagogické nakladateľstvo, 1990
Dítě, škola a matematika : Konstruktivistické přístupy k vyučování / Milan Hejný, František Kuřina. Praha : Portál, 2001
Stavba planimetrie / Ján Gatial, Milan Hejný. Bratislava : Slovenské pedagogické nakladateľstvo, 1973
Teória vyučovania matematiky 2 / Milan Hejný ... [et al.]. Bratislava : Slovenské pedagogické nakladateľstvo, 1990
Analýza řešení slovních úloh : Kapitoly z didaktiky matematiky. / Jarmila Novotná.. Praha : Univerzita Karlova, 2000.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 81

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., Mgr. Lucia Šimová

Last change: 15.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-115/22	Differential Geometry

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:
Homeworks (written solutions of problems and their consulting 60%), final exam (oral exam with written preparation 40%). Rough evaluation scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
Student understands knowledge on curves in Euclidean space, especially in dimensions 2 and 3, the basic facts on surfaces in 3-dimensional Euclidean space necessary for studying advanced topics in descriptive geometry and its applications.

Class syllabus:
Curves, curvature, torsion, Frenet frame, fundamental theorem of curves. Surfaces, first fundamental form, Second fundamental form, Dupins indicatrix, principal curvatures, Gauss curvature, geodesics.

Recommended literature:
Wolfgang Kühnel: Differential Geometry, Curves-Surfaces-Manifolds, AMS, 2015
Analytická a diferenciální geometrie / Bruno Budinský. Praha : Státní nakladatelství technické literatury, 1983
Lectures on classical differential geometry / Dirk J. Struik. Cambridge : Addison-Wesley Press, 1950
Elektronické učebné texty predmetu

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

A	B	C	D	E	FX
25,0	25,0	25,0	0,0	25,0	0,0

Lecturers: doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 22.06.2022
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-265/22	Differential Geometry for Teachers

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 6.

Educational level: II.

Prerequisites:

Course requirements:
Homeworks (written solutions of problems and their consulting 100%). Rough evaluation scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Student gains deeper knowledge of properties of curves and surfaces. Basic applications in practically oriented areas such as design, constructions, cartography and art are presented.

Class syllabus:
Gears, sculpting, 3D printing, exceptional buildings, maps, font design, arts from the geometry point of view of methods and maps in differential geometry.

Recommended literature:
Helmut Pottmann, Andreas Asperl, Michael Hofer, Axel Kilian, Daril Bentley: Architectural Geometry, Bentley Institute Press, 2007
Lectures on classical differential geometry / Dirk J. Struik. Cambridge : Addison-Wesley Press, 1950
Elektronické učebné texty predmetu

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/1-UXX-237/22	Digital Educational Technologies for Descriptive Geometry

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: I., II.

Prerequisites: FMFI.KDMFI/1-UXX-137/22 - Digital Literacy

Course requirements:
The student can obtain 100% of the grade during the semester. The student prepares assignments of various types in various digital tools, he / she needs at least half of the available points to successfully obtain the final grading.
Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): Preliminary assessment 100% (homework assignments) / 0% final exam

Learning outcomes:
The course graduate:
1. will learn to practically demonstrate work with projection methods of both the parallel and central projection via selected graphic digital tools
2. will be able to practically create a digital presentation of static and dynamic sketches of projections of three-dimensional objects into a suitably chosen projection plane (projections, anaglyphs, animations)
3. will work practically to incorporate basic norms and standards of technical drawing in suitable software tools while creating projections of three-dimensional objects into the chosen projection plane by the given imaging method
4. using specific software tools, they will practically learn the difference between theoretical and numerical model of foundational concepts and objects in the field of geometry using specific software tools, consisting of conceptually more complex geometric models and their visualizations

Class syllabus:
1. useful digital tools for projections imaging (CAD systems, GeoGebra, Maxima, other online tools)
2. static and dynamic digital presentation of concepts from imaging methods of parallel and central projection (digital construction of linear perspective, Monge's projection, military and cavalry axonometry)
3. technical drawing, its norms and standards and their use in professional teaching practice

Recommended literature:
1. electronic texts published on the subject's website

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 87

A	B	C	D	E	FX
77,01	13,79	5,75	2,3	1,15	0,0

Lecturers: Mgr. Marcel Makovník, PhD., Ing. Martin Čavarga

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UXX-240/22	Digital Educational Technologies for Informatics

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: I., II.

Prerequisites:

Course requirements:
Continuous assessment: The student can get 50% points for active participation in seminars and another 50% points for completing tasks.
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100 / 0

Learning outcomes:
The student:
- uses modern DT to plan, prepare and implement its future teaching
- knows suitable digital tools for teaching informatics, can search for them and critically evaluate them
- analyzes educational software for teaching informatics, critically evaluates it and decides on its inclusion in the teaching process
- assesses and decides why, when, where and how DT will contribute to the achievement of educational goals
- is able to manage classroom teaching so that teamwork with the support of DT is used for the benefit of the cognitive process of students,
- is able to communicate with colleagues and students with the help of DT
- uses DT in pupil assessment
- DT also uses to collect and analyze data on students' educational progress, to interpret their results, etc.

Class syllabus:
- The future teacher of informatics and his further education in various areas of informatics.
- Search, use and evaluation of currently available digital tools to support computer science teaching.
- Future computer science teacher as an author of sample solutions to programming problems.
- Preparing the future teacher for the need and updating the DT he uses for teaching.
- Adaptation of the future teacher to new versions of programs for various areas of informatics.
- Future computer science teacher as the author of new tasks for primary and secondary school students.

- Own creative work of a computer science teacher as an author of digital teaching materials for teaching computer science.
- Computer science teacher as a user and didactics of various programming microworlds.
- Advanced techniques for programming environments to teach the areas of Procedures, Problem Solving, Algorithmic Thinking.
- Digital systems suitable for teaching management, communication with students and parents.

Recommended literature:
Own electronic texts published on the website, resp. in the Moodle environment

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 112

A	B	C	D	E	FX
70,54	14,29	9,82	4,46	0,89	0,0

Lecturers: doc. PaedDr. Monika Tomcsányiová, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UXX-341/22	Digital Educational Technologies for Mathematics

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: I., II.

Prerequisites: FMFI.KDMFI/1-UXX-137/22 - Digital Literacy

Course requirements:
Continuous assessment: tasks
Indicative rating scale: A 92%, B 84%, C 76%, D 68%, E 60%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student uses modern digital technologies (DT) to plan, prepare and implement their future teaching (in the relevant subject) and to support the achievement of their educational goals. They has an overview of suitable educational resources for the subject, can search, select and critically evaluate them. They also has an overview of DTs that facilitate the assessment and recording of the cognitive process and educational progress of their students. The student:
- analyzes multimedia educational software from the point of view of the given approbation subject, critically decides on its inclusion in the teaching process,
- critically evaluates educational and support software and other digital content, is able to formulate requirements for educational software and digital content,
- assesses and decides why, when, where and how DT will contribute to the achievement of its educational goals,
- has an overview of how:
- use DT in an appropriate and productive way to help achieve the educational objectives of its subject,
- manage classroom teaching so that teamwork with DT support is used to benefit students' cognitive process,
- communicate with colleagues or pupils through appropriate and effective tools to achieve their teaching objectives,
- use modern DT in evaluating student education,
- use DT to collect and analyze data on students' educational progress, to interpret their results, etc.

Class syllabus:
● Analysis, evaluation and assessment of educational software and digital educational content for the relevant subject.

● Digital technologies usable in the design, preparation, implementation and analysis of the teaching process of the relevant subject.
● Different forms, means and tools of communication in the educational process and in the school environment (eg between school and parents).

Recommended literature:
Relevant literature for the approbation subject.

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 68

A	B	C	D	E	FX
61,76	16,18	8,82	8,82	1,47	2,94

Lecturers: RNDr. Monika Dillingerová, PhD., Mgr. Jana Havlíčková, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UXX-239/22	Digital Educational Technologies for Physics

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: I., II.

Prerequisites:

Course requirements:
Interim evaluation: Active participation; during the semester students develop a project (digital model).
Final evaluation: Presentation of the created digital model and a demonstration of its practical application in teaching.
Indicative rating scale: A = (90, 100]%, B = (80, 90]%, C = (70, 80]%, D: (60, 70]%, E: (50, 60]%).
Scale of assessment (preliminary/final): 20 / 80

Learning outcomes:
Student by completing the course:
- acquire basic knowledge and skills for creating activities with a focus on the digital model,
- be able to make meaningful use of digital technologies in modeling different task situations,
- will be able to plan student activities leading to the creation of digital models,
- will be able to develop interdisciplinary relationships between mathematics, physics and computer science.

Class syllabus:
- basic orientation in the PPPL software environment (computer aided science laboratory)
- dynamic modeling of physical phenomena
- creation of a simple model - body fall
- extension of a simple model with environmental resistance, controls, graphic output
- modeling of oblique litter with environmental resistance
- application of the created model in solving physical problems and situations from everyday life
- case studies in school physics (in terms of models and modeling)
- creation of own model according to the student's choice

Recommended literature:
The teacher's own electronic texts published on the website, resp. in the Moodle environment.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 102

A	B	C	D	E	FX
74,51	16,67	5,88	1,96	0,98	0,0

Lecturers: PaedDr. Lukáš Bartošovič, PhD., doc. RNDr. Peter Demkanin, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UXX-137/22	Digital Literacy

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Course requirements:
Continuous assessment: students will work on one major project throughout the semester and will be assessed continuously on the completion of the associated subtasks
Indicative grading scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students are able to take a research-oriented approach to topics related to the digital age. They can effectively search for information on a given topic, assess its relevance, reflect and discuss it. They are able to specify an unexplored area within a chosen topic and find a way to find out something new about it. They use appropriate digital tools in their research that enable them to collect, process and present the necessary data. They are able to create online documents and work collaboratively within them.

Class syllabus:
- exploring current topics related to digital technologies and discussing them
- working collaboratively to design, conduct and present your own research or investigation on a chosen topic
- using online forms to collect different types of data
- processing and interpreting data using digital tools
- writing an article that incorporates theoretical background and your own findings
- creating a presentation using online tools
- presenting the results of your own research

Recommended literature:
Transformations of the school in the digital age / Ivan Kalaš and team. Bratislava: Slovenské pedagogické nakladateľstvo - Mladé letá, 2013
Pedagogicko-psychologické otázky online vzdělávání / Michal Černý. Brno: Masaryk University, 2018
Own electronic texts published on the website, resp. in the Moodle environment

Languages necessary to complete the course:

Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 257

A	B	C	D	E	FX
79,38	9,34	4,67	1,95	1,17	3,5

Lecturers: Mgr. Mária Čujdíková, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UXX-238/22	Digital Technologies in Education

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 2 **per level/semester:** 13 / 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Course requirements:
The final grade includes an evaluation for the developed designs of teaching models with the support of technology, a total of a maximum of 60 points and an oral exam, a total of a maximum of 40 points. To advance to the oral exam, the student must obtain at least 30 points for teaching models. To pass the oral exam, the student must obtain at least 20 points. The final grade includes an evaluation for the developed teaching models and an oral exam. In order to obtain an A rating, it is necessary to obtain at least 91 points, to obtain an B rating at least 81 points, to obtain a C rating at least 71 points, to obtain a D rating at least 61 points and to obtain an E rating at least 50 points. Scale of assessment (preliminary/final): 60/40

Learning outcomes:
By completing the course, the student will be able to critically assess the safety, suitability and meaningfulness of the application of digital technologies in the teaching process. Understand the risks, opportunities and limits of integrating digital technologies into teaching and their importance in supporting the learning process. He will be able to assess the quality of digital resources with educational content in the context of teaching needs. Can distinguish between false, misleading or truth-altering information and use procedures to verify the veracity, timeliness and scientific accuracy of published facts and facts. Can design an appropriate and effective application of selected digital technologies in the teaching program.

Class syllabus:
Digital resources and digital technologies vs. educational digital resources and educational technologies; Security in the digital world; BYOD in the teaching process - benefits, challenges, limits and limitations; Digital literacy and its importance in the digital world; Possibilities and limits of the use of digital technologies in support of personalized learning, research and research-oriented teaching; Evaluation of the quality of educational technologies and the possibility of their integration into teaching; Selected digital technologies supporting the teaching process.
1. Digital technologies - historical development, use, present, perspectives.
2. Digital literacy - what we mean by digital literacy, methods and means of development DG, education and DG.

3. Digital technologies in education - technologies vs. educational technologies, groups of technologies usable in education (Comprehensive educational environment, educational programs, mobile applications, virtual laboratories, applets, modules, accessories ...).
4. Digital technologies in education - educational content, assessment of suitability and adequacy of technology to support teaching, information retrieval, support of special educational needs.
5. Digital technologies in education - tools for communication, cooperation, creation and sharing of results.
6. Digital technologies in education - systems to support education and organization of the educational process.
7. Digital technologies in education - teaching methods and strategies supporting meaningful and appropriate applications of DT in education.
8. Digital technologies in education - social and ethical aspects of the use of DT in education.
9. Digital content creation - available software tools for creating educational content, teaching materials, quizzes, interactive exercises.
10. Security in the digital age - fake news, hoaxs, detectors and algorithms for their detection.
11. Digital content - procedures for verifying the truthfulness, accuracy and timeliness of information available on the Internet.
12. Research in the use of digital technologies in education.

Recommended literature:

1. Brestenská, B. et al. (2020). Innovative learning with the support of digital technologies. Bratislava: Comenius University in Bratislava, 2020. ISBN: 978-80-223-4927-7
2. Karolčík, Š., Čipková, E., Digital educational resources in the context of evaluating their quality. 1st ed. Bratislava: Comenius University in Bratislava, 155 p
3. ISTE standards for students - https://www.iste.org/standards/iste-standards-for-students
4. ISTE standards for teachers - https://www.iste.org/standards/iste-standards-for-teachers
5. Gormally, Carickman, Peggy; Hallar, Brittan; and Armstrong, Norris (2009) "Effects of Inquiry-based Learning on Students' Science Literacy Skills and Confidence," International Journal for the Scholarship of Teaching and Learning: 3 (2), Article 16. Available at: http: // digitalcommons .georgiasouthern.edu / ij-sotl / vol3 / iss2 / 16
6. Tsung-Hau Jen, Yi-Fen Yeh, Ying-Shao Hsu, Hsin-Kai Wu, Kuan-Ming Chen. (2016). Science teachers' TPACK-Practical: Standard-setting using an evidence-based approach. Computers & Education, Volume 95, Pp. 45-62, DOI: https://doi.org/10.1016/j.compedu.2015.12.009
7. REDECKER, Christine and Yves PUNIE. European Framework for the Digital Competence of Educators: DigCompEdu [online]. © European Union 2017 [cit. 2021-12-09]. Available at: https://op.europa.eu/en/publication-detail/-/publication/fcc33b68-d581-11e7-a5b9-01aa75ed71a1/language-en
8. Digital technologies are changing the cognitive process [online]. State Pedagogical Institute [cit. 2021-12-09]. Available at: https://www.statpedu.sk/files/sk/o-organizacii/projekty/projekt-dvui/publikacie/digitalne_technologie_menia_poznavaci_proces.pdf

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 204

A	B	C	D	E	FX
69,12	13,24	8,33	3,43	1,96	3,92

Lecturers: PaedDr. Andrea Hrušecká, PhD., PaedDr. Roman Hrušecký, PhD., PaedDr. Mgr. Natália Kováčová, PhD.
Last change: 22.06.2022
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

STATE EXAM DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAG+KDMFI/2-UXX-991/22	**Course title:** Diploma Thesis Defense
Number of credits: 10	
Educational level: II.	
Course requirements: Examination: state examination Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 0/100	
Learning outcomes: The student is able to work on the chosen topic at the level of scientific study with a representative selection of professional literature, with appropriately selected scientific procedures and hypotheses that can be verified. The diploma thesis is a contribution in the relevant field of study.	
Class syllabus: 1. The contribution of the final work for the given field of study depending on its nature and degree of study. The evaluation of the diploma thesis takes into account whether the student adequately processes the selected topic at the level of scientific study with a representative selection of professional literature, whether the chosen scientific procedures are appropriate and appropriate, and whether he adequately works with hypotheses that can be verified. The diploma thesis should be a clear contribution in the relevant field of study; 2. Originality of the thesis (the final thesis must not have the character of a plagiarism, must not infringe the copyrights of other authors), part of the documentation for the defense of the final thesis as a subject of state examination is the protocol of originality from the central register. 3. Correctness and correctness of citation of used information sources, research results of other authors and author groups, correctness of description of methods and working procedures of other authors or author groups; 4. Compliance of the structure of the final work with the prescribed composition defined by Internal Regulation no. 12/2013; 5. Respecting the recommended scope of the final thesis (the recommended scope of the diploma thesis is usually 50 - 70 standard pages - 90,000 to 126,000 characters, including spaces), the adequacy of the scope of the thesis is assessed by its supervisor; 6. Linguistic and stylistic level of work and formal arrangement; 7. The method and form of the defense of the final thesis and the student's ability to adequately respond to comments and questions in the opinions of the supervisor and the opponent. 8. In the teaching of art-educational subjects, the final work and its defense may also include the presentation of artistic outputs and performances.	
State exam syllabus:	
Recommended literature: According to the topic of the master thesis.	
Languages necessary to complete the course:	

Slovak, English
Last change: 22.06.2022
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KDMFI+KAG/2-UXX-939/22	**Course title:** Diploma Thesis Seminar
Educational activities: **Type of activities:** seminar **Number of hours:** **per week:** 3 **per level/semester:** 39 **Form of the course:** on-site learning	
Number of credits: 3	
Recommended semester: 5.	
Educational level: II.	
Prerequisites:	
Course requirements: Active participation, ongoing reporting on work on the thesis. A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: Definition of the thesis topic, overview of the current state of problem solving, choice of the theoretical-methodological concept of the thesis and the ability to work selectively and correctly with secondary literature.	
Class syllabus: Choice of thesis topic. Review of literature on the topic. Basic material research and the procedure of its processing. Methods of processing and producing the thesis (citation standards, manuscript editing, note-taking apparatus). Presentation of a partial output (e.g. in the form of one chapter of the thesis).	
Recommended literature: Selection of literature according to the chosen topic of the thesis; The current directive of the Rector of Comenius University on the basic requirements of theses; KATUŠČÁK, D.: Ako písať záverečné a kvalifikačné práce. Nitra: Enigma 2007.	
Languages necessary to complete the course: Slovak, English	
Notes:	

Past grade distribution
Total number of evaluated students: 64

A	ABS	B	C	D	E	FX
92,19	0,0	3,13	1,56	1,56	1,56	0,0

Lecturers: prof. RNDr. Zuzana Kubincová, PhD., doc. RNDr. Pavel Chalmovianský, PhD., doc. PaedDr. Peter Vankúš, PhD., doc. PaedDr. Klára Velmovská, PhD., prof. RNDr. Ivan Kalaš, PhD., Mgr. Jana Havlíčková, PhD., Mgr. Marcel Makovník, PhD.

Last change: 22.08.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-940/22	Diploma Thesis Seminar (1)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:
active participation in the seminar, on time submission of assignments and presentation of preliminary results
A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The graduate of the course is able to obtain and sort information from information sources, especially from monographs, journal articles, conference proceedings and university textbooks. The graduate is able to plan research in the area of the thesis.

Class syllabus:
Formulating the objectives of the thesis on the basis of its assignment; obtaining, sorting and using available resources; working with electronic information sources; formulating research questions, searching for research methods suitable for the topic of the thesis.

Recommended literature:
Creswell JW. Educational research: Planning, conducting, and evaluating quantitative. Prentice Hall Upper Saddle River, NJ; 2002.
Sources listed in the thesis assignment.
Sources available in databases (e.g. wos, scopus, researchgate).
Textbook on research methodology in science teaching recommended by the thesis supervisor.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 54

A	B	C	D	E	FX
96,3	0,0	0,0	0,0	1,85	1,85

Lecturers: doc. PaedDr. Mária Slavíčková, PhD., prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Klára Velmovská, PhD., doc. RNDr. Pavel Chalmovianský, PhD., doc. PaedDr. Peter Vankúš, PhD., RNDr. Martina Bátorová, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-941/22	Diploma Thesis Seminar (2)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 6.

Educational level: II.

Prerequisites:

Course requirements:
Active participation, ongoing reporting on work on the thesis.
A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The graduate is able to elaborate the chosen topic at the level of a scientific study with a representative selection of literature, with appropriately chosen scientific procedures and hypotheses that can be verified. The graduate is able to formulate the contribution of his/her own work in the field of informatics/mathematics/physics teaching.

Class syllabus:
Development of argumentation skills, causal thinking and creativity in the area of the thesis topic.
Development of abilities to present the results of own work in the field of the thesis topic.

Recommended literature:
Creswell JW. Educational research: Planning, conducting, and evaluating quantitative. Prentice Hall Upper Saddle River, NJ; 2002.
Sources listed in the thesis assignment.
Sources available in databases (e.g. wos, scopus, researchgate).
Textbook on research methodology in science teaching recommended by the thesis supervisor.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 36

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. PaedDr. Mária Slavíčková, PhD., doc. RNDr. Peter Demkanin, PhD., prof. RNDr. Zuzana Kubincová, PhD., doc. RNDr. Pavel Chalmovianský, PhD., doc. PaedDr. Peter Vankúš, PhD., RNDr. Martina Bátorová, PhD.
Last change: 20.06.2022
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-MPG-247/22	Effective Writing of Proffesional Texts

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3., 5.

Educational level: I., II.

Prerequisites:

Course requirements:
The student can obtain 100% of the grade during the semester. The student prepares assignments of various types in various digital tools, he / she needs at least half of the available points to successfully obtain the final grading.
Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): Preliminary assessment 100% (homework assignments) / 0% final exam

Learning outcomes:
1. The graduate will acquire advanced skills needed to work in the LaTeX typographic system.
2. The graduate will acquire basic skills in the computer algebra system wxMaxima. Learns the basic structures and procedures of the environment's language, learns to write simple scripts and generate visualizations of basic mathematical and geometric concepts.
3. The graduate will get acquainted with the methodological procedures of writing longer professional texts, from the stage of preparation to the finalization of the text.

Class syllabus:
1. LaTeX: Typing mathematical formulae in LaTeX. Drafting texts in LaTeX. Additional document settings in LaTeX, more advanced typesetting concepts (document settings, templates, custom environment definitions, etc.). LaTeX presentations.
2. wxMaxima: Introduction to the environment. Setup and control. Basic programming concepts (variable, cycle, condition, data structures). Basic mathematical concepts and structures (matrices, equations, maps). Rendering and visualization in plane and space (polygons, curves, surfaces). Animation and visualization of processes.
3. Methodology of writing professional texts: basic thought procedures for creating longer professional texts.

Recommended literature:
Electronic texts, scripts and other materials published on the teacher's website.
https://www.latex-project.org/help/documentation/
https://maxima.sourceforge.io/documentation.html

https://home.csulb.edu/~woollett/mbe.html

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 29

A	B	C	D	E	FX
27,59	27,59	13,79	6,9	20,69	3,45

Lecturers: RNDr. Martina Bátorová, PhD., doc. RNDr. Andrej Ferko, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/2-MXX-130/21	Elements of AI

Educational activities:
Type of activities: independent work
Number of hours:
per week: 25 **per level/semester:** 325
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Passing the online course https://course.elementsofai.com/ (in Enlish or Slovak version).

Learning outcomes:
The student will get acquainted with selected basic concepts of artificial intelligence and their use in solving various practical tasks.

Class syllabus:
1. What is artificial intelligence: related areas, AI philosophy.
2. Troubleshooting and UI: Browsing and troubleshooting, browsing and games
3. Probability and chance, Bayes' theorem, naive Bayesian classification.
4. Machine learning: nearest neighbor classifier, regression.
5. Neural networks: basics, creation, modern techniques.
6. Consequences: on predicting the future, the effects of AI on society, summary.

Recommended literature:
Russell S., Norwig P. (2010). Artificial Intelligence: A Modern Approach, (3rd ed.), Prentice Hall. Available in faculty library.
Marsland S. (2015). Machine Learning: An Algorithmic Perspective, (2nd ed.), CRC Press.

Languages necessary to complete the course:
Slovak or English

Notes:
The course consists of 20 numerical and 5 text-based tasks. Numerical tasks are checked automatically, text-based tasks are evaluated anonymously by students.

Past grade distribution
Total number of evaluated students: 95

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Mária Markošová, PhD.

Last change: 22.08.2021
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/2-MXX-130/21	Elements of AI

Educational activities:
Type of activities: independent work
Number of hours:
per week: 25 **per level/semester:** 325
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Passing the online course https://course.elementsofai.com/ (in Enlish or Slovak version).

Learning outcomes:
The student will get acquainted with selected basic concepts of artificial intelligence and their use in solving various practical tasks.

Class syllabus:
1. What is artificial intelligence: related areas, AI philosophy.
2. Troubleshooting and UI: Browsing and troubleshooting, browsing and games
3. Probability and chance, Bayes' theorem, naive Bayesian classification.
4. Machine learning: nearest neighbor classifier, regression.
5. Neural networks: basics, creation, modern techniques.
6. Consequences: on predicting the future, the effects of AI on society, summary.

Recommended literature:
Russell S., Norwig P. (2010). Artificial Intelligence: A Modern Approach, (3rd ed.), Prentice Hall. Available in faculty library.
Marsland S. (2015). Machine Learning: An Algorithmic Perspective, (2nd ed.), CRC Press.

Languages necessary to complete the course:
Slovak or English

Notes:
The course consists of 20 numerical and 5 text-based tasks. Numerical tasks are checked automatically, text-based tasks are evaluated anonymously by students.

Past grade distribution
Total number of evaluated students: 95

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Mária Markošová, PhD., prof. Ing. Igor Farkaš, Dr., doc. RNDr. Martin Takáč, PhD.
Last change: 22.08.2021
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-233/13	English Conversation Course (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 3., 7., 9.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
tests, presentations, essays
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Continual improvement of all language skills focused on communication/speaking, listening comprehension and writing. The emphasis is on discourse, lexicology and morphology, word-bank broadening of communicational English as well as English for specific purposes appropriate for university students. This course is a follow up of the previously taught ESP course.

Class syllabus:
This course's focus is to broaden spoken/communicational English for students with B2/C1 level of English knowledge.

Recommended literature:
Appropriate study material is supplied based on the participants'level of English by the lecturer. (Sources- The Guardian, The Herald Morning Sun. The Nine News, The West Australian, BBC News and podcasts, CNN podcasts).

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 318

A	B	C	D	E	FX
77,36	8,81	4,4	1,26	0,94	7,23

Lecturers: Mgr. Aneta Barnes

Last change: 11.04.2024
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-234/13	English Conversation Course (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 4., 8., 10.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
tests, oral presentations, essays
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Continual improvement of all language skills focused on communication/speaking, listening comprehension and writing. The emphasis is on discourse, lexicology and morphology, word-bank broadening of communicational/spoken English as well as English for specific purpose appropriate for university students. This course is a follow up of the Conversational English course 1.

Class syllabus:
This course's focus is to broaden spoken/communicational English for students with B2/C1 level of English knowledge(Upper-Intermediate/Lower Advanced).

Recommended literature:
Appropriate study material is supplied based on the participants'level of English by the lecturer. (Sources- The Guardian, The Herald Morning Sun. The Nine News, The West Australian, BBC News and podcasts, CNN podcasts).

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 201

A	B	C	D	E	FX
82,09	8,96	2,49	1,0	0,0	5,47

Lecturers: Mgr. Aneta Barnes

Last change: 11.04.2024
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-131/22	Financial Literacy for Everyone

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: active participation in seminars / elaboration of assignments
An exam:
Indicative evaluation scale: e.g. A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student:
- knows the target requirements for a financially literate student
- propose activities and be able to assess their suitability
- can solve and prepare his / her own tasks in every topic of financial literacy.

Class syllabus:
- National standard financial literacy
- Origin and development of money;
- Financial responsibility of consumers;
- Planning, receiving and working;
- Consumer decision-making and management;
- Credit and debt;
- Saving and investing;
- Risk management and insurance;

Recommended literature:
FFinancie v praxi A / Peter Tóth, Monika Dillingerová, Bratislava : ABCedu, a.s. 2019
Financie v praxi B / Peter Samuel Tóth, Monika Dillingerová, Bratislava : ABCedu, a.s. 2021,
Financie v praxi C / Peter Samuel Tóth, Monika Dillingerová, Bratislava : ABCedu, a.s. will be printed soon
my own electronic texts published on a website in LMS Moodle

Languages necessary to complete the course:
slovak

Notes:

Past grade distribution
Total number of evaluated students: 59

A	B	C	D	E	FX
98,31	0,0	0,0	0,0	0,0	1,69

Lecturers: RNDr. Monika Dillingerová, PhD.

Last change: 17.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-141/00	French Language (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
French language is taught at two levels: beginner and intermediate. Students opt for one of them depending on whether they wish to obtain the fundamentals of the language or wish to maintain and/or improve previous knowledge of French.

Recommended literature:
Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 499

A	B	C	D	E	FX
48,5	19,44	16,63	7,82	2,0	5,61

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-142/00	French Language (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
The subject continues the program of French language (1) and provides courses of essential and intermediate French language.

Recommended literature:
Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 307

A	B	C	D	E	FX
45,6	22,48	16,94	8,79	2,28	3,91

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-241/00	French Language (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3., 9.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
The subject provides a course of intermediate French language, covering not only general, but also technical language.

Recommended literature:
Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 128

A	B	C	D	E	FX
48,44	24,22	17,19	5,47	0,78	3,91

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-242/00	French Language (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4., 10.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
The subject provides a course of intermediate French covering not only general, but also technical French language.

Recommended literature:
Menand Robert: Le Nouveau taxi 2, Hachette FLE, Paris, France 2009, ISBN 978-2-01-155551 - 9

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 79

A	B	C	D	E	FX
43,04	32,91	16,46	2,53	1,27	3,8

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-151/00	German Language (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
To master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)

Class syllabus:
German language is taught at three levels: beginner, intermediate and advanced. Students opt for one of them depending on whether they need to learn the fundamentals or maintain and/or improve their previous knowledge.
This course's focus is to master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)

Recommended literature:
Appropriate study material is supplied by teacher based on the participants'level of German proficiency.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 874

A	B	C	D	E	FX
38,33	24,71	18,42	8,81	2,86	6,86

Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Dobiašová, PhD.

Last change: 05.09.2025

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-152/00	German Language (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
To master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)

Class syllabus:
German language is taught at two levels: beginner and intermediate. Students opt for one of them depending on whether they wish to obtain the fundamentals of the language or wish to maintain and/or improve previous knowledge of German.
This course's focus is to to master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)

Recommended literature:
Appropriate study material is supplied by teacher based on the participants'level of German proficiency

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 542

A	B	C	D	E	FX
38,01	19,56	19,56	12,36	3,51	7,01

Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Dobiašová, PhD.

Last change: 05.09.2025

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-251/00	German Language (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3., 9.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Master the basics of general language and basic professional terminology of individual fields of study (depending on the advanced level of students)

Class syllabus:
The course is a follow-up to the German language (1,2). The subject provides a course of intermediate or advanced German language.
This course's focus is to deepen the knowledge of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency).

Recommended literature:
Appropriate study material is supplied by teacher based on the participants'level of German proficiency.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 191

A	B	C	D	E	FX
45,03	23,04	19,37	6,81	2,09	3,66

Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Dobiašová, PhD.

Last change: 05.09.2025

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-252/00	German Language (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4., 10.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Master the basics of general language and basic professional terminology of individual fields of study (depending on the advanced level of students)

Class syllabus:
The course is a follow-up to the German language (1-3). It provides a course of intermediate and advanced German language.
This course's focus is to deepen the knowledge of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency).

Recommended literature:
Appropriate study material is supplied by teacher based on the participants'level of German proficiency.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 104

A	B	C	D	E	FX
44,23	22,12	14,42	10,58	3,85	4,81

Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Dobiašová, PhD.

Last change: 05.09.2025

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.CENAM/2-MXX-134/26	Innovation and Entrepreneurship in Natural and Technical Sciences

Educational activities:
Type of activities: lecture / independent work
Number of hours:
per week: 2 / 1 **per level/semester:** 26 / 13
Form of the course: on-site learning

Type, volume, methods and workload of the student - additional information
2/1 (lecture / individual work)

Number of credits: 3

Recommended semester: 1., 7.

Educational level: I.II., II.

Prerequisites:

Course requirements:
The condition for admission to the exam is active participation in at least 80% of the lessons.
The final assessment consists of a presentation of the semester project. To successfully complete the course, it is necessary to achieve at least 50% of the overall score.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course, students can describe the possibilities for commercialization of scientific and technological research. They can identify market needs, assess the market potential of a technological solution, and are familiar with the terminology of entrepreneurship, technology transfer, and intellectual property protection. They understand the overall structure of a business plan and the main forms of financing for technological projects. They are familiar with the principles of communication, teamwork, and team leadership and can apply them appropriately in project work and its presentation.

Class syllabus:
1. Commercialization of scientific research.
2. Fundamentals of entrepreneurship and startup terminology.
3. Identification of problems and customer needs analysis (design thinking).
4. Technology transfer. Technology Readiness Levels (TRL).
5. Intellectual property and its protection.
6. Market, customer, and market potential of a technological solution.
7. Business Model Canvas. Revenue models.
8. Sources of financing for technological projects.
9. Pitching and communication of the solution.
10. Fundamentals of management and leadership.
11. Innovation support and incubation structures at national and international levels.

Recommended literature:
Clark, Timothy R., et al. Business Model Generation. Wiley, 2010

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Tomáš Plecenik, PhD., Mgr. Veronika Hidaši Turiničová, PhD.

Last change: 13.03.2026

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UXX-343/22	Interesting Extracurricular Activities

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3., 5.

Educational level: I., II.

Prerequisites:

Course requirements:
Interim evaluation: Active participation; during the semester, students prepare a written semester work.
Indicative rating scale A = (90, 100]%, B = (80, 90]%, C = (70, 80]%, D: (60, 70]%, E: (50, 60]%).
Scale of assessment (preliminary/final): 100 / 0

Learning outcomes:
Student by completing the course:
- acquire basic knowledge about the specifics of leading hobby groups,
- acquire basic knowledge of the specifics of working with different age groups and age-mixed groups,
- will be able to actively apply selected methods of non-formal and informal learning,
- will be able to develop interdisciplinary relationships.

Class syllabus:
- Formal, non-formal and informal learning.
- Objectives of extracurricular activities - knowledge, skills, attitudes, relationships.
- Situation analysis - condition analysis, environment analysis and needs analysis.
- Organizational forms of extracurricular leisure activities.
- Methods of work in the department of interest.
- Examples of good practice.

Recommended literature:
own electronic texts published on the website, resp. in the Moodle environment
Pešek, T., Škrabský, T., Novosádová, M., Dočkalová, J. 2019. The syllabary of non-formal education in youth work, Bratislava, YouthWatch, ISBN 978-80-973031-2-9

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 1

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. PaedDr. Viera Haverlíková, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAI/2-MXX-131/21	International Team-based Research Project

Educational activities:
Type of activities: course / independent work
Number of hours:
per week: 3 **per level/semester:** 39 / 30s
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1., 7.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Continuous assessment: active participation in research in an international student team (25%), presentation of work in a workshop (25%), scientific article (50%)
Indicative evaluation scale: A 90 %, B 80 %, C 70 %, D 60 %, E 50 %
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will learn in the team to agree on a common research topic, formulate research questions, determine research methods for the problem, collect and evaluate data, discuss their findings, present research results to the professional public, analyze and evaluate the scientific work of their colleagues, prepare a scientific article suitable for publication

Class syllabus:
- Research methodology
- Design and implementation of a research project in an international group (preferably interdisciplinary)
- Methods and tools for collaboration in virtual space, collaboration in science and practice
- Academic writing, presentation of research results through scientific articles; objectives, content and structure of scientific articles; forms of academic publication, publication forums and evaluation of their quality
- Quality assurance and feedback - peer review
- Communication of results through posters or conference presentations

Recommended literature:
- Teachers' own electronic study materials published on the course website or in the Moodle system
- Gavora, Peter a kol. 2010. Elektronická učebnica pedagogického výskumu. [online]. Bratislava : Univerzita Komenského, 2010. Dostupné na: http://www.e-metodologia.fedu.uniba.sk/ ISBN 978–80–223–2951–4.

- Tharenou, P., Donohue, R. and Cooper, B., 2007. Management research methods. Cambridge University Press.
- Topping, A., 2015: The Quantitative-Qualitative Continium. In: Gerrish, K. and Lathlean, J., The Research Process in Nursing, p. 159-172
- Williamson, K. and Johanson, G. eds., 2017. Research methods: Information, systems, and contexts. Chandos Publishing.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 10

A	B	C	D	E	FX
70,0	0,0	0,0	0,0	30,0	0,0

Lecturers: prof. RNDr. Zuzana Kubincová, PhD., doc. RNDr. Martin Homola, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UMA-164/22	Introduction to Graph Theory

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KAG+KI/2-UMA-164/15

Course requirements:
Peliminary evaluation: homeworks
Exam: oral
Indicative evaluation scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Students will get acquainted with basic concepts of graph theory. At the same time, they will learn to transform different types of problems into graph theory problems and solve them algorithmically.

Class syllabus:
Some basic concepts and results from graph theory, searching graphs reachability and connectivity, trees and spanning trees, planar graphs, hard problems in graph theory.

Recommended literature:
Grafové algoritmy / Ján Plesník. Bratislava : Veda, 1983
Grafy a jejich aplikace / Jiří Demel, Academia, 2002
Konec záhady hlavolamů / Stanislav Vejmola, SPN 1989

Languages necessary to complete the course:
slovak,english

Notes:

Past grade distribution
Total number of evaluated students: 8

A	B	C	D	E	FX
25,0	12,5	0,0	37,5	25,0	0,0

Lecturers: doc. RNDr. Martin Mačaj, PhD.

Last change: 14.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-218/11	Mathematical Background of Music

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: individual work of students, project
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
By completing the course, the student will deepen and combine knowledge of basic mathematics courses in bachelor's studies in the study program mathematics teacher preparation in combination, build on knowledge of mathematics didactics and broaden horizons in the context of creating lessons using interdisciplinary relationships.

Class syllabus:
Selected parts of music theory from the point of view of mathematics, connection to mathematics from lower secondary school to university, related to the teaching of mathematics, preparation of interdisciplinary projects and activities for direct inclusion in teaching and leisure activities.

Recommended literature:
Mathematics and Art / Bruter (Ed.), Springer
Hudba ako zdroj námetov vo vyučovaní matematiky / M. Slavíčková, In. Matematika, informatika, fyzika. Roč. 21, č. 38 (2012), s. 3-8. ISSN 1335-7794
Chladniho obrazce / E. Dubajová, (časť diplomovej práce), dostupné na https://wilma.sk/dokumenty/ef0ed9b0f05bd757ddcf91b96794b0cf/show
The Science of Sound / T. D. Rossing, R. F. Moore, P. A. Wheeler, 3. vyd., Pearson, 2014
Music: A Mathematical Offering / D. Benson, Department of Mathematics, Meston Building, University of Aberdeen, UK. 2008

Languages necessary to complete the course:
slovak, english

Notes:
To complete the course, it is recommended to have at least a basic knowledge of music theory (min. of 2 years music school)

Past grade distribution
Total number of evaluated students: 19

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. PaedDr. Mária Slavíčková, PhD.

Last change: 17.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-125/22	Methodology of Pedagogical Research

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:
Attendance at lectures is not necessary, but recommended. (20%)
The exercises evaluate active work, solving tasks such as. coding, analysis and data collection, etc. and solving beds at home. (60%)
The course is completed by a research project (20%)
The condition for successful completion of the course is to obtain at least 60% of the maximum possible evaluation of the course. The rating is given on a scale:
A (100-91%, excellent - excellent results),
B (90-81%, very good - above average standard),
C (80-73%, good - normal reliable work),
D (72-66%, satisfactory - acceptable results),
E (65-60%, sufficient - results meet minimum criteria),
Fx (59-0%, insufficient - additional work required)
Scale of assessment (preliminary/final): 80/20

Learning outcomes:
At the end of the semester, students will receive:
Knowledge of basic stages and methods of empirical research of educational phenomena, basic methodological concepts, stages, methods and principles of quantitative and qualitative pedagogical research.
Skills needed to study and analyze scientific studies in pedagogy.
The teacher is able to design his / her own educational research, survey or action research and, with the support of the trainer, to carry out an independent research effort.
Ability to choose appropriate and meaningful research topics, deftly develop a research project, collect and empirically correct analysis of research data. They can interpret, defend and publish research data meaningfully and creatively.
Ability to critically evaluate various pedagogical researches, their implementation and their results. They can create and choose the right type of research, with regard to solving a problem in the teaching process. They are able to create, implement and evaluate a test of knowledge and skills, according to the rules of creation and with regard to educational goals.

Class syllabus:

Research of educational phenomena. Action research as a specific professional activity of a teacher. Stages of empirical educational research. Procedures and techniques of research of educational phenomena (experiment, observation, scales and scaling, interview, questionnaire, sociometry and measurement of social climate, method of content analysis of school documents).
Qualitative research (characteristics, principles, use), collection of qualitative data (tools, conditions, tool creation), processing and interpretation of qualitative data (transcription, coding, theory creation, use), quantitative research (characteristics, principles, use), collection of quantitative data data (tools, conditions, tool creation), processing and analysis of quantitative data. (statistical methods, types, application, use), objectivity, reliability and validity of research, designs of qualitative, quantitative and mixed pedagogical research

Recommended literature:

PROKŠA, M., HELD, Ľ. et al .: Methodology of pedagogical research and its application in didactics of natural sciences. Bratislava: Comenius University, 2008.
CHRÁSKA, M .: Methods of pedagogical research.Prague, Grada, 2007.
SILVERMAN, D .: How to do qualitative research. Bratislava, Ikar, 2005.
GAVORA, P .: Introduction to pedagogical research. Bratislava: UK, 1996, 1999, 2001, 2008.
GAVORA, P .: A Guide to Qualitative Research Methodology. Bratislava: UK, 2007.
MAŇÁK, J. - ŠVEC, V .: Ways of pedagogical research. Brno: Paido, 2004.
PELIKÁN, J .: Basics of empirical research of pedagogical phenomena. Prague: Karolinum, 1998, 2004, 2007.
ŠVEC, Š. et al .: Methodology of educational sciences. Quantitative-scientific and qualitative-humanities approaches. Bratislava: Iris, 1996. 2nd ed. Brno: Paido, 2009.
GAVORA, P. et al. 2010. Electronic textbook of pedagogical research methodology. (Online). Bratislava: Comenius University in Bratislava, 2010. Available online. ISBN 978-80-223-2951-4.
STRAUSS, A., CORBINOVÁ, J. 1999. Basics of qualitative research. Procedures and techniques of grounded theory. Boskovice: Nakladatelství Albert, 1999, 196p. ISBN 80-85834-60-X.
ŠEĎOVÁ, K., ŠVAŘÍČEK, R., 2007. Qualitative research in pedagogical sciences. Prague: Portal, 2007, 377 p. ISBN 978-80-7367-313-0.
ŠVAŘÍČEK, R - ŠEĎOVÁ, K .. et al .: Qualitative research in pedagogical sciences. Game rules. Prague: Portal, 2007
J.W. CRESWELL: Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research: International Edition. Pearson Education (US) 2011
J.W. CRESWELL, V.L. Plano CLARK .: Designing and Conducting Mixed Methods Researc. SAGE Publications Inc, 2017

Languages necessary to complete the course:

Slovak

Notes:

Past grade distribution

Total number of evaluated students: 203

A	B	C	D	E	FX
68,97	15,76	6,9	3,94	1,48	2,96

Lecturers: doc. Mgr. Karolína Miková, PhD., PaedDr. Tünde Kozánek Kiss, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-257/15	Methods for Solving Mathematical Tasks (1)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: Homework - individual work of students
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will master methods of solving various mathematical tasks from the curriculum of lower and upper secondary school and will be able to apply these methods in the teaching of mathematics.

Class syllabus:
Generally about solving mathematical tasks, basic methods of solving mathematical tasks –patterns identification and conclusion making, figural approaches to solving, formulating equivalent problems, modifying the problem, choosing effective marking, using symmetry, dividing the problem into several special cases, reverse procedure, indirect procedure, use of parity, mathematical induction, Dirichlet (Pigeon) principle.

Recommended literature:
Metódy riešenia matematických problémov / L. C. Larson ; from the American original translated by Jaroslav Smítal. Bratislava : Alfa, 1990
Metódy riešenia matematických úloh / Tomáš Hecht, Zita Sklenáriková. Bratislava : Slovenské pedagogické nakladateľstvo, 1992
Tasks from Mathematical Olympiad and Mathematical correspondence seminars

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 198

A	B	C	D	E	FX
89,39	4,55	1,01	0,51	0,51	4,04

Lecturers: doc. PaedDr. Peter Vankúš, PhD., Mgr. Emília Miťková, PhD.

Last change: 17.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-258/15	Methods for Solving Mathematical Tasks (2)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: Homework - individual work of students
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will master methods of solving various mathematical tasks from the curriculum of lower and upper secondary school and will be able to apply these methods in the teaching of mathematics.

Class syllabus:
Equations, inequalities, systems of equations and inequalities, sets of points of given properties, analytical geometry, construction tasks, planimetric tasks, stereometric tasks, inequalities in geometry, number theory, diophantic equations, combinatorial geometry, sequences, recurrent relationships, trigonometry and complex numbers, probability.

Recommended literature:
Metódy riešenia matematických problémov / L. C. Larson ; from the American original translated by Jaroslav Smítal. Bratislava : Alfa, 1990
Metódy riešenia matematických úloh / Tomáš Hecht, Zita Sklenáriková. Bratislava : Slovenské pedagogické nakladateľstvo, 1992
Tasks from Mathematical Olympiad and Mathematical correspondence seminars

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 114

A	B	C	D	E	FX
94,74	2,63	0,88	0,0	0,0	1,75

Lecturers: Mgr. Emília Miťková, PhD., doc. PaedDr. Peter Vankúš, PhD.
Last change: 17.03.2022
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-UDG-112/22	Methods of Projections (1)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 3 / 2 **per level/semester:** 39 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Course requirements:
Preliminary assessment: homework assignments and short written tests
Final assessment: written test and oral exam
Approximate grading scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
The course graduate masters elements of stereometry and has good geometric foundations for methods of projections. He has an overview of significant transformations of the plane and their basic invariants.

Class syllabus:
Foundations of planimetry and stereometry: relations of basic geometric shapes, their metric properties and relationships (perpendicularity, distances, and angles).
Classes of collineations of Euclidean and extended Euclidean planes:
- isometry, similarity,
- affinity and signed ratio; axial affinity; ellipse as an affine image of a circle, constructions of an ellipse
- collineation and cross ratio; central (axial) collineation, vanishing lines
Use of affinity and collineation in the construction of cross sections of prismatic and pyramidal surfaces.

Recommended literature:
Deskriptivní geometrie 1 / Alois Urban. Praha : Státní nakladatelství technické literatury, 1982
Deskriptívna geometria : Návody na cvičenia / Darina Kyselová ... [et al.]. Bratislava : Slovenská technická univerzita, 2002
Stereometria – elementárna geometria trojrozmerného euklidovského priestoru / Petra Klenková, Diplomová práca FMFI UK, 2006. Dostupné na http://flurry.dg.fmph.uniba.sk/webog/SuboryOG/kudlickova/1Stereometria_dipl.pdf

Perspektívna afinita medzi dvoma rovinami / Zita Sklenáriková – Marta Pémová. Elektronické učebné texty, FMFI UK. Dostupné na http://flurry.dg.fmph.uniba.sk/webog/ SuboryOG/ kudlickova/1Perspektivna_afinita.pdf
Zobrazovacie metódy II. / Zita Sklenáriková. Bratislava : Univerzita Komenského, 1980
Geometrické základy zobrazovacích metód: učebný text na stránke vyučujúcej http:// fractal.dam.fmph.uniba.sk/~pilnikova/zm/zm.pdf

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 3

A	B	C	D	E	FX
33,33	33,33	0,0	0,0	33,33	0,0

Lecturers: RNDr. Jana Chalmovianská, PhD., RNDr. Martina Bátorová, PhD.

Last change: 22.09.2025

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-UDG-113/22	Methods of Projections (2)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

Course requirements:
Preliminary assessment: homework assignments and short written tests
Final assessment: written test and oral exam
Approximate grading scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
Graduates of this course understand the geometry of conic sections, master the basics of both spot-hight (topographic) and Monge projections, and know how to solve relational and metric problems in these projections.

Class syllabus:
Metric properties of conic sections: ellipse, hyperbola, parabola.
Conic section as the image of a circle in collineation.
Cross sections of a cylindrical and conical surface of revolution (Q-D theorems).
Working with a 2D CAD system.
Spot-hight (topographic) projection and Monge projection:
- principles of methods, basic concepts,
- images of basic geometric shapes and solids,
- solving relational and metric tasks in these projections.

Recommended literature:
Deskriptivní geometrie 1 / Alois Urban. Praha : Státní nakladatelství technické literatury, 1982
Konštruktívna geometria pre technikov / Václav Medek, Jozef Zámožík. Bratislava : Alfa, 1978
Deskriptívna geometria : Návody na cvičenia / Darina Kyselová ... [et al.]. Bratislava : Slovenská technická univerzita, 2002
Geometrické základy zobrazovacích metód: učebný text na stránke vyučujúcej http://fractal.dam.fmph.uniba.sk/~pilnikova/zm/zm.pdf

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 3

A	B	C	D	E	FX
33,33	0,0	0,0	33,33	0,0	33,33

Lecturers: RNDr. Jana Chalmovianská, PhD., doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 22.09.2025

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM+KAG/1-UDG-212/22	Methods of Projections (3)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

Course requirements:
Continuous assessment: written examinations, homework for a total of 40 points according to the instructions of the teacher
Exam: written (50 points) and oral (10 points)
Indicative rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
The graduate of the course knows the theoretical foundations of imaging methods of rectangular axonometry and oblique projection. In both imaging methods, it can display basic bodies and solve positional and metric problems about them.

Class syllabus:
Rectangular axonometry - principle of imaging method, basic concepts. Display of basic geometric shapes, positional and metric tasks. Display of basic bodies (prism, pyramid, cylinder, cone, sphere). Oblique projection - the principle of the imaging method with auxiliary rectangular projection or with the use of auxiliary projection. Perspective affinity between some projections of points of the same plane. Solving positional and metric problems in this display method and displaying basic bodies.

Recommended literature:
Zobrazovacie metódy II. / Zita Sklenáriková. Bratislava : Univerzita Komenského, 1980
Deskriptivní geometrie 1 / Alois Urban. Praha : Státní nakladatelství technické literatury, 1982

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

A	B	C	D	E	FX
33,33	0,0	0,0	0,0	33,33	33,33

Lecturers: RNDr. Kristína Rostás, PhD., doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM+KAG/1-UDG-213/22	Methods of Projections (4)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

Course requirements:
Continuous assessment: written examinations, homework for a total of 40 points according to the instructions of the teacher
Exam: written (50 points) and oral (10 points)
Indicative rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
The graduate of the course masters the theoretical foundations of the imaging method of oblique axonometry and central projection. Can display basic geometric shapes in these methods and solve positional and metric problems about them. Can display basic bodies and solve problems about them in both imaging methods.

Class syllabus:
Oblique axonometry - principle of imaging method, Pohlke's theorem. Solving positional and metric problems in the plane and space. Display of basic bodies. Direct problem solving and solution by converting to Monge's representation (Sobotka's constructions). Central projection - principle, central projections of basic geometric shapes. Solving position and metric problems. The image of a circle in the central projection and the central projections of the basic bodies.

Recommended literature:
Zobrazovacie metódy II. / Zita Sklenáriková. Bratislava : Univerzita Komenského, 1980
Deskriptivní geometrie 1 / Alois Urban. Praha : Státní nakladatelství technické literatury, 1982

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: RNDr. Kristína Rostás, PhD., doc. RNDr. Pavel Chalmovianský, PhD., RNDr. Jana Chalmovianská, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-162/22	Non-Euclidean Geometry

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 5.

Educational level: II.

Prerequisites:

Course requirements:
Homeworks (written solutions of problems and their consulting 100%). Rough evaluation scale: A 90%, B 80%, C 70%, D 60%, E 50%

Learning outcomes:
Student masters basic knowledge on non-Euclidean geometries in analytic way. Basic spherical geometry is studied. Lobatchevskhian geometry is studied via several models in Minkowski space such as Beltrami-Klein and Poincaré.

Class syllabus:
History of non-Euclidean geometries (projective, elliptic, hyperbolic). Euclidean axiom on parallels and its equivalents. Spherical geometry. Minkowski space and its geometry. Beltrami-Klein model of hyperbolic plane. Parallels, length and angles in the model. Poincare model of hyperbolic plane. Higher-dimensional analogues of the hyperbolic plane.

Recommended literature:
John Ratcliffe: Foundations of Hyperbolic Manifolds, Springer, 2006
Marcel Berger: Geometry 1,2, Springer, 2009
Stavba planimetrie / Ján Gatial, Milan Hejný. Bratislava : Slovenské pedagogické nakladateľstvo, 1973
Konštrukčná geometria pre matematicko-fyzikálne a pedagogické fakulty : (Pre učiteľstvo všeobecnovzdelávacích predmetov v kombinácii s matematikou) / Vladimír Piják, Ondrej Šedivý, Michal Grajcar, Valent Zaťko. Bratislava : Slovenské pedagogické nakladateľstvo, 1985
Introduction to Geometry / H. S.M. Coxeter. New York : John Wiley, 1989
Projektívna geometria / Štefan Solčan. Bratislava : MFF UK, 1995
Neeuklidovská geometrie / Kristýna Křížová, Diplomová práce, PF MU Brno, 2010. Dostupné na http://is.muni.cz/th/175713/prif_m/Diplomova_prace.pdf

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 2

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-114/22	Non-traditional Forms of Teaching

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 4.

Educational level: II., N

Prerequisites:

Course requirements:
seminar work / project
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will be able to distinguish between different methods of education. They will have an overview of the principles and principles of each method and will be able to apply these principles in practice.

Class syllabus:
Flipped Classroom, Cooperative teaching, Brain-compatible teaching, method "Break", Realistic teaching (RME), Guided active learning, Jigsaw method, problem solving, rpg, simulation.

Recommended literature:

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 28

A	B	C	D	E	FX
96,43	0,0	0,0	3,57	0,0	0,0

Lecturers: RNDr. Monika Dillingerová, PhD.

Last change: 17.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/2-MXX-132/23	Participation in Empirical Research

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 202

A	B	C	D	E	FX
89,6	1,49	1,49	0,0	2,97	4,46

Lecturers: Mgr. Xenia Daniela Poslon, PhD.

Last change: 06.09.2023

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/2-MXX-132/23	Participation in Empirical Research

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 202

A	B	C	D	E	FX
89,6	1,49	1,49	0,0	2,97	4,46

Lecturers: Mgr. Xenia Daniela Poslon, PhD.

Last change: 06.09.2023

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/1-UXX-231/22	Pedagogic Communication

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 1 **per level/semester:** 13 / 13
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

Antirequisites: FMFI-Prif.KDPP/1-UXX-231/10

Course requirements:
The course is completed by assessment, the ratio of interim/final assessment is 80/20. The condition for successful completion of the course is obtaining at least 60 % of the maximum possible course grade. Assignments during the semester in the form of micro-assignments, model communication situations, student-designed and recorded video sequences, analysis of recordings, and an emphasis on strengthening communication competencies and skills will be assessed.
Assessment will be given on a scale:
A: 93-100%, excellent - outstanding results,
B: 85-92%, very good - above average standard,
C: 76-84%, good - normal reliable work,
D: 68-75%, satisfactory - acceptable results,
E: 60-67%, satisfactory - results meet minimum criteria,
Fx: 0-59%, inadequate - extra work required
Translated with www.DeepL.com/Translator (free version)
Scale of assessment (preliminary/final): 80/20

Learning outcomes:
Upon successful completion of the course, students have knowledge of the principles of effective pedagogical communication. They are able to analyze communication episodes, identify problematic communication aspects and create communication opportunities and learning environments that promote student participation in the classroom. They understand the importance and methods of managing pedagogical communication in school classrooms. They can anticipate and respond appropriately to a variety of communication situations. Through the implementation of micro-outcomes and other forms of training in effective pedagogical communication, they are able to apply the acquired theoretical knowledge in the practice of primary and secondary schools.

Class syllabus:
Insights into the phylogenetic and ontogenetic aspects of interpersonal communication, social communication, interaction.

Communication styles, communication competences and skills of future teachers, their practice and strengthening.
Pedagogical communication -functions, planes, ways, components, directions, effectiveness, basic rules, organizational forms of pedagogical communication, non-verbal (extralinguistic means and paralinguistic aspects of speech) and verbal (written and oral) communication in the school classroom, teacher management of communication (questions, feedback), pupil participation in communication, persuasion, argumentation, criticism, school language, IRF/IRE structure, communication by action in the classroom, space in communication, methods of investigating pedagogical communication.
Types of conflict in school settings, strategies and methods of conflict resolution.
Errors in pedagogical communication. Humour in the school classroom.
Intergenerational communication in education.

Recommended literature:

BARKER, A. 2020. Zlepšete své komunikační schopnosti. Lingea.
GAVORA, P. 2007. Učiteľ a žiaci v komunikácii. Bratislava : UK.
HALÁKOVÁ, Z. 2012. Pedagogická komunikácia. 1. vyd., Bratislava : Univerzita Komenského.
MAREŠ, J., KŘIVOHLAVÝ, I. 1995. Komunikace ve škole. Brno : Masarykova univerzita.
MIKULÁŠTÍK, M. 2003. Komunikační dovednosti v praxi. Praha : Grada Publishing.
NELEŠOVSKÁ, A. 2005. Pedagogická komunikace v teorii a praxi. Praha : Grada.
PECH, J. 2009. Řeč těla a umění komunikace. Praha : NS Svoboda.
ŠEĎOVÁ, K. 2013. Humor ve škole. Brno : Masarykova univerzita.
ŠEĎOVÁ, K. a kol. 2019. Výuková komunikace. Brno: Masarykova univerzita.
ŠEĎOVÁ, K., ŠVAŘÍČEK, R., ŠALAMOUNOVÁ Z. 2012. Komunikace ve školní třídě. Praha : Portál.
ŠTĚPANÍK, J. 2005. Umění jednat s lidmi 2. Komunikace. Praha : Grada.
VYBÍRAL, Z. a kol. 2009. Psychologie komunikace. Praha : Portál.
aktuálne články a štúdie

Languages necessary to complete the course:
Slovak, Czech

Notes:

Past grade distribution
Total number of evaluated students: 145

A	B	C	D	E	FX
83,45	7,59	2,07	2,07	2,07	2,76

Lecturers: doc. RNDr. Martin Takáč, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-121/22	Pedagogic Diagnostics

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Antirequisites: FMFI-Prif.KDPP/2-UXX-121/15

Course requirements:
The condition for successful completion of the course is to obtain at least 60% of the maximum possible evaluation of the course = active participation in classes (30%), homework (20%), reading literature (20%)
The course is completed by an exam (30%).
The rating is given on a scale:
A (100-91%, excellent - excellent results),
B (90-81%, very good - above average standard),
C (80-73%, good - normal reliable work),
D (72-66%, satisfactory - acceptable results),
E (65-60%, sufficient - results meet minimum criteria),
Fx (59-0%, insufficient - additional work required)
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
Students will acquire key knowledge about the standard form of diagnostics, its basic stages and the formulation of diagnostic conclusions. They will acquire the necessary competencies in the use of diagnostic procedures and techniques for determining and evaluating students' performance in school conditions and in the reflection and evaluation of their own activities and professional growth.

Class syllabus:
Diagnosis as standard, resp. intuitive process of detailed cognition and evaluation of the pupil's personality, pupil groups, resp. family environment. Diagnosis as a "court" about a student (student groups), various types of diagnoses, including case studies. Diagnostic procedures and techniques (product analysis of pupils 'activities, performance tests, design techniques and traditional testing methods. The essence of school evaluation and its types. Evaluation of pupils' results, effects and school conditions. Action research as a specific professional activity of a teacher. Observation method. Interview method. Sociometers, self-diagnostics of pupils and teachers (self-evaluation,

burnout diagnostics, diaries, questionnaires ...), diagnostics of classroom relationships, diagnosis of bullying.

Recommended literature:

FONTANA, D. 2014. Psychology in school practice. Prague: Portal 2014. 384 p. ISBN 978-80-262-0741-2
GAVORA, P. 2010. What are my students like? Nitra: Enigma, 2010. 224 p. ISBN 978-80-89132-91-1
JEDLIČKA, R. 2018. Pedagogical - psychological diagnostics (Chapter 7). In JEDLIČKA, R. et al. Educational psychology for teachers. Prague: Grada, 2018. p. 349-358. ISBN 978-80-271-0586-1
DYTRTOVÁ, R. - KRHUTOVÁ, M. 2009. Teacher: příprava na profesi. Publisher information: Praha: Grada, 128 s. ISBN 978-80-247-2863-6
HRABAL, V. st. - HRABAL, V. Jr. 2004. Diagnostics: Pedagogical-psychological diagnostics of a pupil with an introduction to diagnostic application. Prague: Karolinum. 268 s. ISBN 80-246-0319-3
HELUS, Z. 2007. Social psychology for pedagogues. Prague: Grada, 2007. 280 p. ISBN 978-80-247-1168-3
KOMPOLT, P. - TIMKOVÁ, B .: Pedagogical diagnostics and action research. Bratislava: UK, 2010. ISBN 978-80-223-2787-9
MIKULAJOVÁ, M. et al. 2012. Reading, writing and dyslexia. Bratislava: Slovak Association of Speech Therapy. 296 s. ISBN 978-80-89113-94-1
POKORNÁ, V. 2010. Theory and correction of learning and behavioral disorders. Prague: Portal. 336 s. ISBN 978-80-7376-817-3
MERTIN, V., KREJČOVÁ, L .: Methods and Procedures of Pupil Cognition. Pedagogical diagnostics. Wolters Kluwer CR, 2016;
GINNIS, P .: Effective Teaching Tools for Teachers. Universum Publishing House, 2019;
FLETCHER-WOOD, H .: Responsive Teaching. Cognitive sciences and formative assessment in practice. Universum, 2021.

Languages necessary to complete the course:
Slovak, Czech

Notes:

Past grade distribution
Total number of evaluated students: 96

A	B	C	D	E	FX
62,5	11,46	9,38	5,21	9,38	2,08

Lecturers: Mgr. Lucia Budinská, PhD., PaedDr. Mgr. Natália Kováčová, PhD., doc. Mgr. Karolína Miková, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-201/22	Philosophical Aspects of Education

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:
During the teaching period of the semester: participation, activity, elaboration of assignments or final test. The test or assignments will be from the material covered during the semester. The student can get a maximum of 50 points, the minimum for successful completion of the course is 30 points.
Classification scale: A: 100-92%, B: 91-84%; C: 83-76%, D: 75-68%, E: 67-60% FX: 0-59%
Violation of academic ethics results in the cancellation of the obtained points in the relevant evaluation item. The teacher accepts max. 2 absences with proven documents.
Interim / final evaluation weight: 100% in the examination period

Learning outcomes:
Upon successful completion of the course, students will know:
A: in the field of knowledge:
• What is philosophy, its basic structure, goals and mission
• What issues do philosophy of education and philosophical anthropology address, what are their goals and mission?
• What is the significance of philosophy for solving problems of theory and practice of education
B: in the field of skills:
• Orientation in basic philosophical problems, disciplines and concepts
• Ask questions and formulate answers regarding philosophical questions of education
• Think independently about philosophical issues of education

Class syllabus:
1. The concept and structure of philosophy
2. Philosophical and pedagogical anthropology
3. Philosophical anthropology and axiology
4. Philosophy of education I.
5. Philosophy of education II.
6. Philosophy of culture and values
7. Ethical issues and perspectives of education

Recommended literature:

ANZENBACHER, Arno: Introduction to Philosophy. Prague: SPN, 1991. ISBN: 80-04-26038-1.
BREZINKA, Wolfgang: Filozofické základy výchovy. Prague: Zvon, 1996. ISBN: 80-7113-169-5
CORETH, Emerich: What is a human being? Fundamentals of philosophical anthropology. Prague: Zvon, 1994. ISBN: 80-7113-098-2
POPKIN, Richard. H., STROLL, Avrum: Philosophy for Everyone. Prague: Ivo Zelezny, 2000. ISBN: 80-240-0257-4
PELCOVÁ, Naděžda: Philosophical and pedagogical anthropology. Prague: Karolinum, 2000. ISBN: 80-246-0076-5
Complementary literature and literature that is not in AK UK will be presented at the beginning and during the semester. Teachers' presentations and non-AK UK literature are available at MS Teams.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 58

A	B	C	D	E	FX
70,69	18,97	8,62	0,0	1,72	0,0

Lecturers: Mgr. Štefan Zolcer, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-110/00	Physical Education and Sport (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
Practicing of the students´ game skills in collective sports: basketball, volleyball, football, floorball and hockey. Mastering of the basic technique of a particular sport discipline in other sports. In paddling, basic training on still and slightly flowing water. Development of coordination skills, improvement of articular mobility and cardiovascular system.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 2007

A	B	C	D	E	FX
97,41	0,6	0,1	0,0	0,0	1,89

Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová

Last change: 15.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-120/00	Physical Education and Sport (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
Practicing of offensive and defensive game combinations and playing with modified rules in collective sports such as basketball, volleyball, football, floorball, hockey. Command of elements of higher difficulty in locomotion skills (swimming - crawl stroke, breast stroke, butterfly stroke, trampoline jumping and aerobics – practicing of areobics compositions, bodybuilding – development of the main muscle groups, paddling on running water. Testing of the level of physical fitness and coordination skills.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1797

A	B	C	D	E	FX
98,44	0,33	0,06	0,06	0,06	1,06

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Branislav Nedbálek, PhD., PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová

Last change: 15.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-210/00	Physical Education and Sport (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3., 9.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
To improve offensive and defensive game combinations in collective sports. Practicing of tactical and technical elements in individual sports. Compensatory exercises to correct wrong body posture. Stretching. Competition rules in sport disciplines.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1525

A	B	C	D	E	FX
98,36	0,39	0,07	0,0	0,07	1,11

Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová

Last change: 15.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-220/00	Physical Education and Sport (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4., 10.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
Sport training for Faculty Championships in a selected sport with modified rules. Selection of sport-talented students into teams of the Faculty Sport League, University League of Bratislava Faculties, and participation in sport events of the Faculty and University.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1267

A	B	C	D	E	FX
98,34	0,39	0,08	0,08	0,08	1,03

Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Branislav Nedbálek, PhD., Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová

Last change: 15.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-253/22	Problematic Parts of Secondary School Mathematics

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KDMFI/2-UMA-253/19

Course requirements:
Continuous assessment: output in front of the board, seminar work
Indicative assessment scale: A 94%, B 86%, C 79%, D 70%, E 60%, Fx <60%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
The course will follow on from the compulsory course Didactics of Mathematics 2 and will deal in depth with specific adequate methods, forms and age-appropriate activities for teaching problematic units in mathematics at lower secondary school.

Recommended literature:
Dostupné učebnice Matematiky pre 5. – 9. ročník ZŠ a nižšie ročníky osemročných gymnázií / Ján Žabka, Pavol Černek / Ondrej Šedivý a kol. / Soňa Čeretková a kol. / Milan Hejný a kol.
Nový Pomocník z matematiky (5. – 9. ročník) / Iveta Kohanová a kol.
Dítě, škola a matematika: Konstruktivistické přístupy k vyučování / Milan Hejný, František Kuřina. Praha : Portál, 2001
Matematické cítenie / Jo Boalerová. Bratislava : Tatran, 2016
Moderní vyučování / Geoffrey Petty. Praha : Portál, 1993
Dvacet pět kapitol z didaktiky matematiky / Milan Hejný, Jarmila Novotná, Naďa Stehlíková (Eds.) Praha, 2004
Own electronic materials published via the subject's website (eg course in LMS Moodle)

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 32

A	B	C	D	E	FX
93,75	0,0	0,0	0,0	0,0	6,25

Lecturers: doc. PaedDr. Peter Vankúš, PhD., Mgr. Jana Havlíčková, PhD.

Last change: 14.03.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-261/22	Projective Geometry for Teachers

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 5.

Educational level: I., II.

Prerequisites:

Course requirements:
Continuous assessment: a written test
Indicative evaluation scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The graduate knows how to compute basic analytical problems in projective space. The construction of projective space is known. Analytical and synthetic theory of bundles of lines, conic sections, quadrics is interconnected and can be used in selected problems from applications of geometry. He knows some applications of the theory of quadratic surfaces.

Class syllabus:
Axiomatic construction of n-dimensional projective space above the field, especially real three-dimensional projective space. Synthetic construction of the theory of second degree surfaces in real projective space, projective formation of ruled surfaces. Polarity. Some properties of second degree surfaces and their consequences for solving problems on these surfaces.
Projective classification of second degree surfaces. Affine specializations of second degree surfaces. Affine metric classification. Bundles of straight lines, conic sections and quadrics.

Recommended literature:
Marcel Berger: Geometry 1, 2, Springer, 2009
Computational line geometry / Helmut Pottmann, Johannes Wallner. Berlin : Springer, 2001
Methods of algebraic geometry : Volume 1 : Book 1: Algebraic preliminaries, Book 2: Projective space / W. V. D. Hodge, D. Pedoe. Cambridge : At the University Press, 1947
Methods of algebraic geometry : Volume 2 : Book 3: General theory of algebraic varieties in projective space, Book 4: Quadrics and grassmann varieties / W. V. Hodge, D. Pedoe. Cambridge : At the University Press, 1952
Projektivní geometrie : 2. díl : Útvary dvojparametrické / Václav Hlavatý. Praha : Melantrich, 1945

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 1

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: RNDr. Barbora Pokorná, PhD., doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-PriF.KDPP/1-UXX-141/22	Psychology for Teachers (1)

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 1.

Educational level: I., II., N

Prerequisites:

Antirequisites: FMFI-PriF.KDPP/1-UXX-131/10

Course requirements:
The course is completed by an exam, the evaluation ratio is 50% of the continuous evaluation + 50% of the final evaluation. Interim evaluation includes a midterm test (30% of evaluation) and a seminar paper (20% of evaluation). The final evaluation includes the final exam (50% of the evaluation).
To successfully complete the course, it is necessary to obtain at least 60% of points.
The rating is given on a scale:
A (100-92%, excellent - excellent results),
B (91-84%, very good - above average standard),
C (83-76%, good - normal reliable work),
D (75-68%, satisfactory - acceptable results),
E (67-60%, sufficient - results meet minimum criteria),
Fx (59-0%, insufficient - additional work required)
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
The aim of the course Psychology for Teachers 1 is to make basic information about the general laws of human experience and behavior so that they can provide a platform for understanding the functioning of the human psyche and synthesize psychological knowledge, facts, theories, research approaches to a comprehensive view of the individual's psyche for creative professional application. in pedagogical practice. After completing the course, the student is able to orientate in the terminology of general and developmental psychology, can apply the knowledge of general and developmental psychology in the educational context, knows the laws of psychology, especially with regard to the needs of lower and upper secondary education, knows the laws of cognitive processes and their application in the educational process.

Class syllabus:

1. Introduction to psychology: psychology as a science, the subject of psychological research, approaches in psychology, the importance and use of psychology in the school environment and in the work of teachers.
2. Research and research methods in psychology: the importance of scientific knowledge, features of scientific work and methodology of psychological research.
3. Research and definition of mental processes. Mental and cognitive processes. Cognitive processes in the developmental and educational context in the school environment
a. perception, current research and its applications in the school environment. Interpretation and distortions in connection with the perception of the teacher.
b. Attention processes. Attention concentration, switching, current approaches. Multitasking and attention in the context of school performance and success.
c. Memory processes. Basic models of memory and their relation to education. Elaboration as a tool for effective remembering. Interference. Memory as an ability.
4. Representation and organization of knowledge, thinking: characteristics of thinking and its types. Terms: their connection and learning. Judgment and decision making. Fixed and growth-oriented mind settings. Problem solving: types of problems, problem solving strategies.
5. Intelligence: theory of intelligence, measurement of intelligence. Stability and development of intellectual abilities in relation to education. Intellectual talent.
6. Introduction to developmental psychology. Basic concepts, subject of research and methods of developmental psychology.
7. Mental development in general - determinants of development, character and types of developmental changes, characteristics of development from a psychological point of view, critical periods in development.
8. Selected developmental theories I.
9. Selected developmental theories II.
10. Periodization of development and characteristics of individual development periods I. with emphasis on the period of school age
11. Periodization of development and characteristics of individual development periods II. with an emphasis on adolescence
12. Basics of developmental psychopathology.

Recommended literature:

ATKINSON, R.C. et al. (2003) Psychology. Prague: Portal.
FONTANA, D. (1997) Psychology in school practice. Prague: Protal.
HORT, V. et al. (2008) Child and adolescent psychiatry. Prague: Portal
HOLEČEK, V. (2014) Psychology in teaching practice. Prague: City.
LANGMEIER, J.-KREJČÍŘOVÁ, D. (2006). Developmental Psychology. City.
STERNBERG, R., J. (2009). Cognitive psychology. Portal.
VÁGNEROVÁ, M. (2000) Developmental psychology. Childhood, adulthood, old age. Prague: Portal.
VESELSKÝ, M. (2001) Educational Psychology 1. Theory and practice. Bratislava: Comenius University.
VESELSKÝ, M. (2005) Educational Psychology 2. Theory and practice. Bratislava: Comenius University.

Languages necessary to complete the course:

Slovak and Czech language, English language (text comprehension)

Notes:

Past grade distribution
Total number of evaluated students: 697

A	B	C	D	E	FX
22,96	16,5	23,53	17,36	15,64	4,02

Lecturers: Mgr. Eva Paulisová, PhD., PhDr. ThLic. Peter Ikhardt, PhD., RNDr. Jana Ciceková, PhD.

Last change: 16.09.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-Prif.KDDP/1-UXX-142/22	Psychology for Teachers (2)

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 2.

Educational level: I., II., N

Prerequisites: FMFI-PriF.KDPP/1-UXX-141/22 - Psychology for Teachers (1)

Antirequisites: FMFI-PriF.KDPP/1-UXX-135/10

Course requirements:
The course is completed by an exam, the evaluation ratio is 50% of the continuous evaluation + 50% of the final evaluation.
Continuous assessment includes active participation in seminars (at least 80% of the teaching part), presentation of the selected topic (20%) and elaboration of an essay (30%). Completion of these assignments is a condition of admission to the final exam.
The final evaluation includes the final exam (50% of the evaluation).
To successfully complete the course, it is necessary to obtain at least 60% of points.
The rating is given on a scale:
A (100-92%, excellent - excellent results),
B (91-84%, very good - above average standard),
C (83-76%, good - normal reliable work),
D (75-68%, satisfactory - acceptable results),
E (68-60%, sufficient - results meet minimum criteria),
Fx (59-0%, insufficient - additional work required)
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
The aim of the course Psychology for Teachers 2 is to make available the knowledge of personality psychology and educational psychology so that they can form the basis for understanding the functioning of the human psyche and synthesize psychological knowledge and theories into a comprehensive view of the individual's psyche for creative professional application in pedagogical practice. The aim of the course is also to increase the sensitivity of students to interindividual diversity in the school environment, to develop their psychological literacy and ability to apply current knowledge of theoretical and applied psychological disciplines in educational practice. After completing the course, the student is able to orientate in the terminology of personality psychology and educational psychology and can use the knowledge from these disciplines in designing an educational unit, knows the psychological context of the educational process.

Class syllabus:

1. Personality psychology and interindividual differences. Understanding personality in psychology. Application of personality psychology in pedagogical practice.
2. Biological and social bases of personality. Personality structure - temperament, character, abilities, motivation.
3. Personality typologies and their importance in educational practice. Personality of the teacher.
4. Psychology of learning - types, laws and conditions of learning. Selected approaches and theories of learning.
5. Psychological issues of motivation in the field of education. Resources and factors influencing motivation. Types of motivation. Selected theories of motivation. Performance motivation, goals and self-regulation.
6. Creativity in education - conditions and models of creative learning. Increasing creativity in students.
7. Pupils' performance in the educational process. School success vs. failure, failure of students. Psychological testing of students. Test and pre-test conditions. Evaluation and self-evaluation.
8. Psychosocial climate and class / school atmosphere as a factor of optimal education. Classroom communication. Class engagement and teacher influence. School classroom management and administration.
9. School class as a social group, the position of the individual - the student in it.
10. Learning disabilities. Pupils' problems in survival and behavior. Emotionality, self-image and aggression in the school environment. Psychological aspects of school inclusion. The role of the school psychologist and his help to the school.
11. Positive psychology in the school environment. Empathy and prosocial behavior in the classroom. Emotions in education and their importance. Active participation, interest, commitment, curiosity.
12. Personality in difficult life situations. Stress management. Load resistance. Mental health and psychohygiene at school. Prevention of bullying, mobbying and burnout.

Recommended literature:

ATKINSON, R.C. et al. (2003) Psychology. Prague: Portal.
ČÁP, P. & MAREŠ, J. (2001) Psychology for Teachers. Prague: Portal.
FONTANA, D. (1997) Psychology in school practice. Prague: Protal.
HOLEČEK, V. (2014) Psychology in teaching practice. Prague: City.
VÁGNEROVÁ, M. (2005). School counseling psychology for teachers. Prague: Karolinum
VÁGNEROVÁ, M. (2010). Personality psychology. Prague: Karolinum
VENDEL, S. (2007). Educational psychology. Bratislava: Epos
VESELSKÝ, M. (2001) Educational Psychology 1. Theory and practice. Bratislava: Comenius University.
VESELSKÝ, M. (2005) Educational Psychology 2. Theory and practice. Bratislava: Comenius University.

Languages necessary to complete the course:

Slovak and Czech language, English language (text comprehension)

Notes:

Past grade distribution

Total number of evaluated students: 524

A	B	C	D	E	FX
30,53	20,8	19,47	17,56	8,59	3,05

Lecturers: Mgr. Eva Paulisová, PhD., RNDr. Jana Ciceková, PhD.
Last change: 16.09.2022
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-161/00	Russian Language (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.

Class syllabus:
To master the fundamentals of general Russian. The language level is A1.
Learning the Cyrillic (Russian) alphabet, gaining basic language competence, building up skills and confidence in dealing with unfamiliar authentic and semi-authentic texts.
The subject provides a course in Russian language for beginners.

Recommended literature:
The textbook: : Точка Ру A1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 746

A	B	C	D	E	FX
57,77	16,62	11,13	4,16	1,74	8,58

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-162/00	Russian Language (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.

Class syllabus:
To master the fundamentals of general Russian.
Learning the Cyrillic (Russian) alphabet, gaining basic language competence, building up skills and confidence in dealing with unfamiliar authentic and semi-authentic texts.
The subject continues the program of Russian language (1) and provides a course of Russian for beginners.

Recommended literature:
Textbook: Точка Ру A1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 435

A	B	C	D	E	FX
63,91	16,09	8,97	3,91	0,92	6,21

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-261/00	Russian Language (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3., 9.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.

Class syllabus:
Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary.
The course "Russian for Intermediate Students" is a follow-up to "Russian for Beginners". The subject of the course is general Russian in the range appropriate to the given level.

Recommended literature:
Точка Ру A2 (Ольга Долматова, Екатерина Новачац) a Short Stories in Russian (Olly Richards, Alex Rowlings)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 215

A	B	C	D	E	FX
68,84	17,67	9,3	2,33	0,0	1,86

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-262/00	Russian Language (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4., 10.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary.

Class syllabus:
Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary.
The course "Russian for Intermediate Students" is a follow-up to "Russian for Beginners". The subject of the course is general Russian in the range appropriate to the given level.

Recommended literature:
Точка Ру A2 (Ольга Долматова, Екатерина Новачац) a Short Stories in Russian (Olly Richards, Alex Rowlings)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 153

A	B	C	D	E	FX
74,51	14,38	7,19	2,61	0,65	0,65

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UXX-331/22	School Management

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 2 **per level/semester:** 13 / 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: I., II., N

Prerequisites:

Antirequisites: FMFI-Prif.KDPP/1-UXX-331/15

Course requirements:
The condition for successful completion of the course is to obtain at least 60% of the maximum possible evaluation of the course.
The work during the semester on partial tasks from different areas and levels of school management will be evaluated:
- reading and presentation of recommended literature (10%)
- active participation in exercises (35%)
- attendance at lectures and feedback on lectures (20%)
- report+presentation in pairs (15%)
- final written exam (20%)

The rating is given on a scale:
A: 93-100%, excellent - excellent results,
B: 85-92%, very good - above average standard,
C: 76-84%, good - normal reliable work,
D: 68-75%, satisfactory - acceptable results,
E: 60-67%, sufficient - the results meet the minimum criteria,
Fx: 0-59%, insufficient - additional work required
Scale of assessment (preliminary/final): 80 / 20

Learning outcomes:
Knowledge of the school system in the Slovak Republic in comparison with successful education systems in other countries, understanding of the management system and organization of education in the Slovak Republic at all levels, orientation in school and labor legislation, pedagogical documents, electronic systems used in primary and secondary schools (eg Edupage). Ability to apply knowledge of other disciplines in the field of school management.

Class syllabus:
Basic terminology of school management. Education system in the Slovak Republic and education management system. School management models. Personality of a leading pedagogical employee

- legal and personal requirements, leadership styles. Hierarchy of education workers. Control activities in schools, apprenticeship. School and labor legislation (legal regulations governing the activities of primary and secondary schools - laws, decrees, work regulations, pedagogical-organizational instructions, pedagogical documentation), time management. Edupage. Teacher professional development. Class teacher.

Recommended literature:

HALÁKOVÁ, Z., NAGYOVÁ, S., NAGY, T. 2019. School management for students of science subjects with practical examples. Bratislava: UK.
OBDRŽÁLEK, Z. 2002. School and its management. Bratislava: UK.
OBDRŽÁLEK, Z., HORVÁTHOVÁ, K. et al. 2004. Organization and management of education. Terminological and interpretative dictionary. Bratislava: SPN.
EGER, L. 2006. School management. Pilsen: Fraus.
PISOŇOVÁ, M. 2012. Personality development of the school principal - starting points and determinants.
Current legal regulations governing the activities of primary and secondary schools (laws, decrees, internal regulations, pedagogical-organizational instructions).
Pedagogical documentation
WONG, H. K., WONG, R.T. The first days of school: How to be an effective teacher. Mountain View, CA: Harry K. Wong Publications, 2005.
LAU, W. Teaching Computing in Secondary Schools: A Practical Handbook. Routledge, 2017.
LEMOV, D. Teach like a champion 2.0: 62 techniques that put students on the path to college. John Wiley & Sons, 2015.
CANGELOSI, J. S. Classroom Management Strategies: How to Gain and Maintain Pupils' Cooperation in Teaching. Portal, 1996.
Current Internet resources and journal sources (Education Technology, School Management in Practice, Quality and more).

Languages necessary to complete the course:
Communication - Slovak
Study of literature - Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 167

A	B	C	D	E	FX
53,29	16,77	20,36	4,79	0,6	4,19

Lecturers: doc. Mgr. Karolína Miková, PhD., PaedDr. Tünde Kozánek Kiss, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-205/22	Selected Chapters of The Learning Sciences

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4., 6.

Educational level: II.

Prerequisites:

Course requirements:
During the semester, the student, based on information from lectures, prepares a proposal for a semester work (10 points) in the required structure, defends it (10 points) and implements it (20 points).
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100 / 0

Learning outcomes:
The student knows selected approaches to current principles and tenets of learning formulated on knowledge of neuroscience results. In accordance with these principles and tenets can design a series of teaching sequences in his approbation.

Class syllabus:
Selected approaches to cognitive psychology. The theory of the 5 pillars of the mind. Knowledge-in-Pieces Theory. Principles and tenets of learning. Applying the acquired knowledge in design a series of teaching sequences in approbation subject.

Recommended literature:
5 pillars of Mind / T.Tokuhama-Espinosa
The Learning Science / R.K.Sawyer
Course materials

Languages necessary to complete the course:
Slovak in combination with English (study literature also in English).

Notes:

Past grade distribution
Total number of evaluated students: 13

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Peter Demkanin, PhD.

Last change: 22.06.2022
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UMA-115/23	Selected Parts of Algebra and Theoretical Arithmetic (1)

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KAG/2-UMA-115/22

Course requirements:
Homework assignments
Grading: A 90%, B 80%, C 70%, D 60%, E 50%, Fx < 50 %
Scale of assessment (preliminary/final): Semester 100% (homework assignments)

Learning outcomes:
Students will gain familiarity with axiomatic definitions and applications of some algebraic structures, such as groups and fields. They will be able to prove basic results about sets operations and to verify whether some commonly used sets are countable or uncountable.

Class syllabus:
Selected topics from the following areas:
Introduction to set theory. Operation with sets, functions. Cardinality, inequality between cardinal numbers, operations with cardinal numbers and their properties. Cantor's theorem. Countable and uncountable sets, applications.
Basics of group theory. Symmetry groups, permutation groups, abstract notion of a group. Subgroups, cyclic groups. Cosets and Langrange's theorem. Homomorphisms, normal subgroups, quotient groups.
Rings and fields. Modular arithmetic, polynomial rings. Construction of Q from Z, C from R, Q(sqrt(p)) from z Q. Field extensions, finite fields, impossibility of some geometric constructions.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 165

A	B	C	D	E	FX
75,76	10,91	8,48	2,42	2,42	0,0

Lecturers: RNDr. Martin Sleziak, PhD., prof. RNDr. Pavol Zlatoš, PhD.
Last change: 29.05.2023
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UMA-116/24	Selected Parts of Algebra and Theoretical Arithmetic (2)

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:
Homework assignments, final exam
Grading: A 90%, B 80%, C 70%, D 60%, E 50%, Fx < 50 %
Scale of assessment (preliminary/final): Semester 25% (homework assignments)/Final exam 75%

Learning outcomes:
Students will gain familiarity with examples of mathematical objects (symmetries, permutations, linear maps) which can be described by using an axiomatic approach. They will be able to use these definitions and deduce basic properties, analyze examples and identify various algebraic structures, such as groups and fields.

Class syllabus:
Selected topics from the following areas:
Examples of permutation groups, braid groups, groups of symmetries and matrix groups. Description by generators, relations, consequences of non-commutativity. Abstract notion of a group. Subgroups, orders, cyclic groups. Cosets and Langrange's theorem. Homomorphisms, normal subgroups, quotient groups. Group actions, stabilizers, orbits. Symmetries of Platonic solids.
Rings, fields and integral domains. Modular arithmetic, polynomial rings. Ideals, ring factorization, homomorphisms of rings. Field extensions. Rings with unique factorization, Gauss primes, etc.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 104

A	B	C	D	E	FX
64,42	14,42	13,46	3,85	3,85	0,0

Lecturers: Mgr. Martin Niepel, PhD., prof. RNDr. Pavol Zlatoš, PhD.

Last change: 09.09.2024
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UMA-207/22	Selected Parts of Geometry (1)

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: homework (50%).
Final assessment: written exam (50%).
At least half of the points from the continuous assessment must be admitted to the exam.
Grading: A [100-90], B (90-80], C (80-70], D (70-60], E (60-50], Fx (50-0].
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Course graduate:
1. Knows basic affine and metric properties of conic sections in the Euclidean plane and quadratic surfaces in the Euclidean three-dimensional space, using mainly the analytical method.
2. Is aware of the crucial role of polarity in the theory of quadratic forms. Is informed about quadrics in the Euclidean space of any dimension.
3. Is acquainted with synthetic constructions of real regular conic sections and practical applications and interpretations of their properties.

Class syllabus:
1. Conics in the Euclidean plane: definition and representation; asymptotic vectors; regular, singular point; the center of the conic; polarity; tangents; principal vectors; axes and vertices of the conics; affine and metric classification of conics; focal points and directrices. Applications.
2. Fundamentals of the theory of quadratic surfaces in the Euclidean three-dimensional space: regular linear and non-linear quadratic surfaces; singular quadratic surfaces; quadratic surfaces such as cylindrical surfaces over the conic sections; quadratic surfaces obtained by affine transformation of a conic. Intersection points of a line (plane) with a quadratic surface.

Recommended literature:
Geometria 1 : Pre študentov matematiky učiteľského štúdia na univerzitách a pedagogických fakultách / Milan Hejný, Valent Zaťko, Pavel Kršňák. Bratislava : Slovenské pedagogické nakladateľstvo, 1985
Analytická teorie kuželoseček a kvadrik / Josef Janyška, Anna Sekaninová. Brno : Masarykova univerzita, 2001

Analytická geometria kužeľosečiek / Leo Boček. Bratislava : Slovenské pedagogické nakladateľstvo, 1978

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 169

A	B	C	D	E	FX
23,08	18,34	28,99	13,61	8,28	7,69

Lecturers: Mgr. Marcel Makovník, PhD., doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 04.07.2023

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UMA-208/24	Selected Parts of Geometry (2)

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:
The student can get 100% for written homeworks.
Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): Preliminary assessment 100% for written homework assignments.

Learning outcomes:
By completing the course, the student will gain deeper knowledge about the properties of curves and surfaces. They will become familiar with their fundamental applications in practical disciplines such as modern design, engineering, construction, cartography, and art.

Class syllabus:
Gear wheels, milling, 3D printing, exceptional structures, maps, typography, painting, and sculpture from the perspective of objects, methods, and representations in differential geometry.

Recommended literature:
Helmut Pottmann, Andreas Asperl, Michael Hofer, Axel Kilian, Daril Bentley: Architectural Geometry, Bentley Institute Press, 2007
Lectures on classical differential geometry / Dirk J. Struik. Cambridge : Addison-Wesley Press, 1950
Elektronické učebné texty predmetu

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 135

A	B	C	D	E	FX
23,7	18,52	25,19	14,81	9,63	8,15

Lecturers: doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 09.09.2024
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/2-UMA-111/22	Selected Parts of Mathematical Analysis (1)

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: homework
Final assessment: paper
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
Students will master the basic analytical methods of investigation and modeling, when the action is affected by two variables. They will be able to estimate the shape of the graph of the functions of two variables.

Class syllabus:
Examples of quantities whose change depends on several variables. Graphs of some typical functions of two variables. Space R ^ 2 and R ^ 3. Sequence convergence in R ^ 2. Limit and continuity of a function of two variables. Partial derivation. Extremes of a function of two variables.

Recommended literature:
Diferenciální počet / Vojtech Jarník. Praha : Academia, 1984
Zbierka úloh z vyššej matematiky : 3.časť / Jozef Eliaš, Ján Horváth, Juraj Kajan. Bratislava : Slovenské vydavateľstvo technickej literatúry, 1967

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 184

A	B	C	D	E	FX
51,63	16,85	15,22	10,33	5,98	0,0

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., Mgr. Jana Havlíčková, PhD.

Last change: 14.03.2022
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/2-UMA-112/24	Selected Parts of Mathematical Analysis (2)

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KMANM/2-UMA-112/15

Course requirements:
Continuous assessment: homework
Final evaluation: test
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
Students will expand their knowledge of the function of two variables. Using the double integral, they will be able to calculate different areas, volumes, lengths of curves.

Class syllabus:
Areas of type [x, y] and [y, x] and a formula for integrating the function of two variables in these areas. Calculation of areas, volumes and lengths of curves.

Recommended literature:
Integrální počet / Vojtech Jarník. Praha : Československá akademie věd, 1976
Zbierka úloh z vyššej matematiky : 4.časť / Jozef Eliaš, Ján Horváth, Juraj Kajan, Robert Šulka. Bratislava : Alfa, 1979
Matematika III, Zbierka riešených úloh z integrálneho počtu funkcie viac premenných a krivkových integrálov / Dillingerová M., Feťková J., Híc P., Tóthová M. Alfa : Bratislava 1990

Languages necessary to complete the course:
slovak, english

Notes:
For successful completion, it is desirable to first complete the course Selected Parts of Mathematical Analysis.

Past grade distribution
Total number of evaluated students: 4

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., Mgr. Jana Havlíčková, PhD.

Last change: 09.09.2024

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-283/22	Selected Topics in Teaching of Mathematics

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: homework (30 points)
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, the student knows the theories of various forms of teaching, some of which he has tried. He knows the root causes of the problems that students with a planar representation of space have - the question "Why don't students see it?". Can carry out various additional activities that develop students' mathematical competencies, e.g. competitions, games, fun afternoon.

Class syllabus:
Basic features and historical development of constructivist teaching. Piaget, Kohlberg, Vygotsky, Bachelard. Creation of teaching material. Group and cooperative teaching. Didactic game, its use and creation. Stereometry cubes with paper scissors and glue. Stereometry of a circle, folding "other" origami. Project teaching, project assignment (to whom, what, how, when, for what time). Problem teaching, design of own problem teaching. Outdoor school - from organization to implementation. Mathematical afternoon at school in nature, creation of a program "out". Mathematical competitions - various forms of competitions, difficulty assessment and task creation.

Recommended literature:
Teória vyučovania matematiky 2 / Milan Hejný ... [et al.]. Bratislava : Slovenské pedagogické nakladateľstvo, 1990
Učebné materiály pre vyučovanie matematiky / výber zostavili a preložili Monika Dillingerová, Lilla Koreňová, Peter Vankúš. Bratislava : Knižničné a edičné centrum FMFI UK, 2009
Geometrické úlohy z matematickej olympiády ZŠ / Monika Dillingerová. Bratislava : Metodicko-pedagogické centrum, 2005

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 128

A	B	C	D	E	FX
60,16	21,88	7,81	3,91	3,13	3,13

Lecturers: doc. PaedDr. Peter Vankúš, PhD., RNDr. Monika Dillingerová, PhD.

Last change: 15.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM+KAG/2-UMA-211/22	Seminar in History of Mathematics (1)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: II., N

Prerequisites:

Course requirements:
Ongoing evaluation: presentation of the prepared lesson (20 points), preparation of the written exam for other participants (10 points), active participation in the evaluation of presentations and written exams of other participants (30 points).
Grading: A (56-60 points), B (51-55 points), C (46-50 points), D (41-45 points), E (36-40 points), Fx (0-35 points).
Weight of the ongoing / final assessment: 100/0
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Student will gain an overview of the various periods of development of mathematics in antiquity, including examples of problems solved in individual basic works.

Class syllabus:
Mathematics of ancient Egypt and Babylonia. Pre-Euclidean mathematics in ancient Greece. Euclid ´s Elements.

Recommended literature:
Dějiny matematiky / Dirk J. Struik ; přeložili Jaroslav Folta, Luboš Nový. Praha : Orbis, 1963
Dějiny matematiky ve starověku / Arnošt Kolman. Praha : Academia, 1968
Dějiny matematiky ve středověku / Adolf P. Juškevič. Praha : Academia, 1977
Dejiny matematiky / Ján Čižmár. Bratislava : Perfekt, 2020
The history of mathematics / Roger L. Cooke. Hoboke, NJ : John Wiley, 2003
The history of mathematics / David M. Burton, New York : McGraw-Hill, 2011

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 194

A	B	C	D	E	FX
69,07	25,77	4,64	0,52	0,0	0,0

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., prof. RNDr. Pavol Zlatoš, PhD., RNDr. Kristína Rostás, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/2-UMA-212/24	Seminar in History of Mathematics (2)

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 6.

Educational level: II., N

Prerequisites:

Course requirements:
Ongoing evaluation: presentation of the prepared lesson (20 points), preparation of the written exam for other participants (10 points), active participation in the evaluation of presentations and written exams of other participants (30 points).
Grading: A (56-60 points), B (51-55 points), C (46-50 points), D (41-45 points), E (36-40 points), Fx (0-35 points).
Weight of the ongoing / final assessment: 100/0
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student will gain an overview of the various periods of mathematics development, including examples of problems solved in individual basic works.

Class syllabus:
Students will choose from the following topics: Ptolemy. Apollonius. Chinese and Arabic mathematics. Fibonacci. Alcuin's problems. Cardano´s Ars Magna. Pascal's Arithmetic Triangle. Huygens´s De Ratiociniis in Ludo Aleae. Bernoulli's Ars Conjectandi. Cavalieri's Geometry of indivisibles. Euler's Introductio and Letters to a German Princess. Venn´s Symbolic Logic.

Recommended literature:
Matematika v proměnách věků III / Editori Jindřich Bečvář, Eduard Fuchs. Praha : Výzkumné centrum pro dějiny vědy, 2004
Dějiny matematiky / Dirk J. Struik ; přeložili Jaroslav Folta, Luboš Nový. Praha : Orbis, 1963
Dějiny matematiky ve starověku / Arnošt Kolman. Praha : Academia, 1968
Dějiny matematiky ve středověku / Adolf P. Juškevič. Praha : Academia, 1977
Dejiny matematiky / Ján Čižmár. Bratislava : Perfekt, 2020
The history of mathematics / Roger L. Cooke. Hoboke, NJ : John Wiley, 2003
The history of mathematics / David M. Burton, New York : McGraw-Hill, 2011

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 18

A	B	C	D	E	FX
94,44	5,56	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc.

Last change: 31.05.2024

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-171/20	Slovak Language for Foreign Students (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I., I.II., II., III.

Prerequisites:

Course requirements:
tests
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
This course is aimed for foreign students to learn the fundamentals of the Slovak language with the focus on basic communication as well as all other language skills- listening comprehension,reading and writing.

Class syllabus:
The sylabus is targeted at the comprehension of the basics of the Slovak language for the absolute beginners (A1).

Recommended literature:
Krížom- Krážom Slovenčina 1, additional material to further support the covered topics.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 155

A	ABS	B	C	D	E	FX	NEABS
40,65	21,29	7,1	4,52	0,65	1,29	21,29	3,23

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-172/20	Slovak Language for Foreign Students (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I., I.II., II., III.

Prerequisites:

Course requirements:
tests
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
This course is aimed for foreign students to learn the fundamentals of the Slovak language with the focus on basic communication as well as all other language skills- listening comprehension,reading and writing.

Class syllabus:
The sylabus is targeted at the comprehension of the basics of the Slovak language for the absolute beginners (A1) and this course is a follow up course to the Slovak language course 1.

Recommended literature:
Krížom- Krážom Slovenčina 1, additional material to further support the covered topics

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 87

A	ABS	B	C	D	E	FX	NEABS
63,22	18,39	1,15	1,15	0,0	0,0	9,2	6,9

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-271/20	Slovak Language for Foreign Students (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3., 9.

Educational level: I., I.II., II., III.

Prerequisites:

Course requirements:
tests
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
This course is aimed for foreign students to better comprehend all the language skills important to enable correct usage of the Slovak language – listening comprehension, reading, writing and speaking.

Class syllabus:
The sylabus is targeted at the comprehension of all the language skills of the Slovak language , and it is a follow up course to the Slovak language course 2.

Recommended literature:
Krížom-Krážom Slovenčina 2, additional material to further support the covered topics.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 32

A	ABS	B	C	D	E	FX	NEABS
59,38	3,13	18,75	3,13	3,13	0,0	12,5	0,0

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-272/20	Slovak Language for Foreign Students (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4., 10.

Educational level: I., I.II., II., III.

Prerequisites:

Course requirements:
tests
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
This course is aimed for foreign students to better comprehend all the language skills important to enable correct usage of the Slovak language – listening comprehension, reading, writing and speaking.

Class syllabus:
The sylabus is targeted at the comprehension of all the language skills of the Slovak language , and it is a follow up course to the Slovak language course 3.

Recommended literature:
Krížom-Krážom Slovenčina 2, additional material to further support the covered topics.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 25

A	ABS	B	C	D	E	FX	NEABS
84,0	0,0	4,0	4,0	0,0	0,0	8,0	0,0

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-115/17	Sports in Natur (1)

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%
The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.

Learning outcomes:
Acquisition and development of basic motor skills and abilities in selected sports: skiing and snowboarding. Mastering the correct technique of performing individual movements, which are necessary for skiing and snowboarding.

Class syllabus:
The student can sign up for the outdoor sports courses offered by the department: skiing, snowboarding. The lessons in the courses are focused on the development of basic and special movement skills and mastering the techniques needed for the sports.

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ does not rent ski equipment.

Past grade distribution
Total number of evaluated students: 186

A	B	C	D	E	FX
98,92	0,0	0,0	0,0	0,0	1,08

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký

Last change: 16.06.2022
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-116/18	Sports in Natur (2)

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%.
The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.

Learning outcomes:
Creating a positive and lasting relationship with physical activity. Acquisition and mastery of basic motor skills and abilities in outdoor sports: windsurfing, beach volleyball, water tourism - river rafting, hiking and other sports according to interest. Training and improving the technique needed for the sports.

Class syllabus:
The student can sign up for the outdoor sports courses offered by the department: water tourism - river rafting, windsurfing, beach volleyball, hiking and other hobby sports. The lessons in the courses are focused on the development of basic and special movement skills and, mastering the techniques needed for the sports.

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ will provide sports equipment.

Past grade distribution
Total number of evaluated students: 109

A	B	C	D	E	FX
95,41	0,0	0,0	0,0	0,0	4,59

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký
Last change: 16.06.2022
Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-204/22	Starting Teacher at School

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: active participation in seminars + preparation for classes (80%), project / report (20%)
A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100 / 0

Learning outcomes:
The student:
- gets a concrete idea of the teacher's responsibilities
- will be acquainted with the recommended procedures and effective ways of solving various situations in pedagogical practice
- propose activities and be able to assess their suitability for application to different problems with different groups of students
- can plan their own personal development in addition to professional development and take a critical approach to self-reflection

Class syllabus:
- first year of the teacher (holidays, payslips, attendance, introductory teacher, training, ...)
- work of subject commissions and pedagogical documentation
- class
- coordination of school activities and events
- communication with parents
- crisis situations at school
- professional development and mental health care
- toxic stress and inappropriate behavior
- bullying at school, mobing and bossing
- working with students with special educational needs

Recommended literature:
own electronic texts published on the website, resp. in the Moodle environment
GINNIS, P .: Effective Teaching Tools for Teachers. Universum Publishing House, 2019.

GORDON, T .: School without Losers. Malvern. 2015.
BREAUX, A .: Quick help for teachers. Portal. 2020.
SMETÁČKOVÁ, I., ŠTECH, S .: Učitelské vyhoření. Portal. 2020.
ČAPEK, R .: Lazy Teacher. How to teach well and effectively. Raabe. 2019
BUCHWALD, P .: Stress at school and how to manage it. Edika. 2013.
JANÍK, T .: Myths of False Error. About chibas in education and pedagogy. Masaryk University. 2020.
ČOKYNA, J .: And where are your edges? N Press. 2019

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 10

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: Mgr. Lucia Budinská, PhD., doc. Mgr. Karolína Miková, PhD., Mgr. Jakub Krcho

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-104/22	Surfaces in Technical Practice (1)

Educational activities:
Type of activities: course
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 5.

Educational level: II.

Prerequisites:

Course requirements:
The student can obtain 100% of the grade for the work during the semester. The student prepares technical drawing assignments. To successfully obtain the grade, he / she needs at least half of the available points.
Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): Preliminary assessment 100% (homework assignments) / 0% final exam

Learning outcomes:
The graduate masters the solution of problems regarding curves on surfaces of revolution used in technical practice. They can construct their intersections and can use parallel lighting to increase the clarity of surface images.

Class syllabus:
Surfaces of revolution, planar sections and intersections of surfaces of revolution. Parallel and technical lighting of surfaces of revolution. Quadratic surfaces of revolution, planar sections and intersections of these surfaces and their parallel illumination.

Recommended literature:
Deskriptivní geometrie : část 2 / Rudolf Piska, Václav Medek. Praha : Státní nakladatelství technické literatury, 1966
Deskriptivní geometrie : díl 2 / Alois Urban. Praha : Státní nakladatelství technické literatury, 1979
Využitie IKT pri vyučovaní témy ROTAČNÉ PLOCHY na všetkých úrovniach vzdelávania / Miroslav Tisoň, Dizertačná práca FMFI UK. Dostupné na http://www.rotacneplochy.sk/
Rotační plochy / Jindřich Červinka. PF MU Brno, Diplomová práce, 2006. Dostupné na http://is.muni.cz/th/52027/prif_m/Rotacni_plochy.pdf
Technické osvětlení / Jan Šafařík, Učebné texty, SF VUT Brno, 2006. Dostupné na http://math.fce.vutbr.cz/vyuka/podpora/jan.safarik-technicke.osvetleni.pdf

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 3

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: Mgr. Tomáš Rusin, PhD., doc. Mgr. Tibor Macko, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/2-UDG-106/22	Surfaces in Technical Practice (2)

Educational activities:
Type of activities: course
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 6.

Educational level: II.

Prerequisites:

Course requirements:
The student can obtain 100% of the grade for the work during the semester. The student prepares technical drawing assignments. To successfully obtain the grade, he / she needs at least half of the available points.
Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): Preliminary assessment 100% (homework assignments) / 0% final exam

Learning outcomes:
The course graduate masters the representation of basic types of surfaces used in technical practice, especially in civil engineering. They master the solution of basic problems regarding these surfaces.

Class syllabus:
Helix. Developable line surfaces (developable helical surfaces, transition surfaces). Non-developable linear surfaces (quadrics, conoids, higher degree surfaces). Helical surfaces (linear, cyclic, general). Other surfaces of technical practice (translational, wedge, sum).

Recommended literature:
Deskriptivní geometrie : díl 2 / Karel Drábek, František Harant, Ota Setzer. Praha : Státní nakladatelství technické literatury, 1979
Konštruktívna geometria pre technikov / Václav Medek, Jozef Zámožík. Bratislava : Alfa, 1978
Plochy technické praxe / Šárka Blaženková. Diplomová práce PF MU Brno, 2006. Dostupné na http://is.muni.cz/th/64132/prif_m/diplomka.pdf
Zborcené přímkové plochy - řešené příklady / Kristýna Rožánková. FA ČVUT, Praha 2011. Dostupné na http://15122.fa.cvut.cz/?download=_/elektronicka_skripta/zborcene_primkove_plochy.pdf.
Plochy stavební praxe / Petra Surynková. Bakalářská práce. MFF UK Praha, 2006. Dostupné na http://www.karlin.mff.cuni.cz/katedry/kdm/diplomky/surynkovabp/Bakalarska_prace.pdf

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 3

A	B	C	D	E	FX
66,67	0,0	33,33	0,0	0,0	0,0

Lecturers: Mgr. Tomáš Rusin, PhD., doc. Mgr. Tibor Macko, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-203/22	Teacher Communication Skills

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: active work in class (interactive presentation and practical solution of tasks - 50% of continuous assessment), submission and presentation of assignments (preparation for class and completion of lessons - 50% of continuous assessment).
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100 / 0

Learning outcomes:
The student will be at the end of the semester:
- know specific activities focused on psychosocial interaction
- have experienced and practiced application of selected communication skills
- familiar with the rules and implications of best practices for effective communication
- know the rules and structure of arguments
- be able to appropriately apply the knowledge of solo taxonomy in evaluating the quality of verbal statements of the student

Class syllabus:
- Key competencies of the teacher, influential theories about concepts in communication
- Verbal and nonverbal communication in the classroom
- Evaluation of verbal outcomes - SOLO taxonomy
- Argumentation as a part of critical thinking, conceptual comics
- Teacher questions
- Feedback
- Pupils' participation in learning communication
- Dialogue teaching
- Use of psychosocial interaction training in school practice
- Silent video as a means of developing communication skills

Recommended literature:
šeďová, K. et al .: Výukova komunikace, Masarykova Univerzita, Brno 2019.

Svoboda, M .: Psychosocial interaction training in pedagogical practice, University of West Bohemia in Pilsen, 2017.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 32

A	B	C	D	E	FX
62,5	9,38	6,25	9,38	9,38	3,13

Lecturers: doc. Mgr. Karolína Miková, PhD., doc. PaedDr. Klára Velmovská, PhD., Mgr. Mária Božová

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-851/22	Teaching Practice A (2)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 10d
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 47

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: PaedDr. Peter Horváth, PhD., RNDr. Michal Winczer, PhD., Mgr. Michaela Vargová, PhD., RNDr. Jana Chalmovianská, PhD., PaedDr. Mgr. Natália Kováčová, PhD.

Last change: 22.08.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-853/22	Teaching Practice A (3)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 15d
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 5.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 62

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: RNDr. Michal Winczer, PhD., Mgr. Michaela Vargová, PhD., PaedDr. Peter Horváth, PhD., RNDr. Jana Chalmovianská, PhD., PaedDr. Mgr. Natália Kováčová, PhD.

Last change: 22.08.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-854/22	Teaching Practice A (3)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 15d
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 5.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 72

A	ABS	B	C	D	E	FX
97,22	0,0	2,78	0,0	0,0	0,0	0,0

Lecturers: RNDr. Michal Winczer, PhD., PaedDr. Peter Horváth, PhD., Mgr. Michaela Vargová, PhD., RNDr. Jana Chalmovianská, PhD., M. A. Linda Steyne, PhD., PaedDr. Mgr. Natália Kováčová, PhD., doc. PaedDr. Janka Peráčková, PhD.

Last change: 22.08.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-852/22	Teaching Practice B (2)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 10d
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 60

A	ABS	B	C	D	E	FX
98,33	0,0	0,0	1,67	0,0	0,0	0,0

Lecturers: RNDr. Michal Winczer, PhD., PaedDr. Peter Horváth, PhD., Mgr. Michaela Vargová, PhD., RNDr. Jana Chalmovianská, PhD., M. A. Linda Steyne, PhD., PaedDr. Mgr. Natália Kováčová, PhD.

Last change: 22.08.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UXX-132/22	Theoretical Fundaments of Education

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 1 / 1 **per level/semester:** 13 / 13
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

Antirequisites: FMFI-Prif.KDPP/1-UXX-132/10

Course requirements:
The course is completed by evaluation, the ratio of continuous / final evaluation is 100/0.
Continuous assessment: active participation in seminars and cooperation with other students (30), homework assignments (30), elaboration of the assigned topic and its presentation at the seminar (20), seminar paper (20)
The condition for successful completion of the course is to obtain half of the points for participation in seminars and homework and submit a presentation and seminar paper. At least 60% of the maximum possible evaluation of the subject must be obtained. The rating is given on a scale:
A (100-91%, excellent - excellent results),
B (90-81%, very good - above average standard),
C (80-73%, good - normal reliable work),
D (72-66%, satisfactory - acceptable results),
E (65-60%, sufficient - results meet minimum criteria),
Fx (59-0%, insufficient - additional work required)
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Upon successful completion of the course, the students have basic knowledge of selected pedagogy disciplines about the nature of education, the philosophical basis of pedagogical thinking and theoretical concepts of education in a historical context. They understand basic pedagogy term, has knowledge of the domains of education. They know the basic development trends of pedagogy, as well as the basic developmental stages of the school. Students understand the school as an institution of formal education and knows the forms of non-formal education. They have basic knowledge about selected current problems of pedagogical practice, about the family and its functions, about the pupil and about learning problems and about educational problems at school.

Class syllabus:
Educational sciences: traditional and modern concepts. Understanding of education and its explanation. Socialization and education. Philosophical basis of pedagogical thinking. Theoretical

concepts of education. Social context of upbringing and education. Education in the changes of time (basic development trends of pedagogy - J. A. Komenský, J. J. Rousseau, J. H. Pestalozzi, J. F. Herbart and pedagogical currents of the 20th century). Subject and object of education, educational interaction. Teacher personality and profession. Institutionalization of education. School, its development and functions. Alternative schools. The student and his social role, family and its educational function, cooperation with the school. Selected current problems of educational practice. Educational problems, education of students with special educational needs. Educational impacts of the school (school climate, hidden curriculum). From education to self-education, free education.

Recommended literature:

BAĎURÍKOVÁ, Z. et al. 2001. School pedagogy. Bratislava: Comenius University.
BREAUX, A .: Quick help for teachers. Portal. 2020.
DYTRTOVÁ, R. - KRHUTOVÁ, M. 2009. Teacher: příprava na profesi. Prague: City.
FONTANA, D. 2014. Psychology in school practice. Prague: Portal.
GINNIS, P .: Effective Teaching Tools for Teachers. Universum Publishing House, 2019.
GORDON, T .: School without Losers. Malvern. 2015.
HAVLÍK, R. - KOŤA, J. 2001. Sociology of education and school. Prague: Portal.
HELUS, Z. 2007. Social psychology for pedagogues. Prague: City.
HLASNA, Slavka et al. 2006. Introduction to pedagogy. Nitra: Enigma.
JEDLIČKA, R., KOŤA, J., SLAVÍK, J., 2018. Educational psychology for teachers. Prague: Grada Publishing, a. s., 2018.
KRATOCHVÍLOVÁ, Emília et al. 2007. Introduction to pedagogy. Trnava: Faculty of Education, Trnava University in Trnava.
KYRIACOU, CH. 2005. Solving educational problems at school. Prague: Portal.
KYRIACOU, CH. 2008. Key teacher skills. Prague: Portal.
MOŽNÝ, I. 2008. Family and society. Prague: SocioLOgické Nakladatelství (SLON).
ONDREJKOVIC, P. et al. 2009. Social pathology. Bratislava: Science.
PRŮCHA, J. 2017. Modern pedagogy. Prague: Portal.
POTOČÁROVÁ, M. 2008. Pedagogy of the family. Bratislava: UK.
SMETÁČKOVÁ, I., ŠTECH, S .: Učitelské vyhoření. Portal. 2020.
VACEK, P. 2008. Development of moral consciousness of students. Prague: Portal.
VALIŠOVÁ, A - KASÍKOVÁ. H. 2007. Pedagogy for teachers. Prague: City.
ZELINA, M. 2004. Theories of education or search for good. Bratislava: SPN.

Languages necessary to complete the course:
Slovak and Czech language

Notes:

Past grade distribution
Total number of evaluated students: 137

A	B	C	D	E	FX
64,96	15,33	10,95	5,84	0,0	2,92

Lecturers: Mgr. Lucia Budinská, PhD., doc. Mgr. Karolína Miková, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UXX-134/22	Theory of Teaching

Educational activities:
Type of activities: lecture / seminar
Number of hours:
per week: 2 / 1 **per level/semester:** 26 / 13
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: I., II., N

Prerequisites:

Antirequisites: FMFI.KDMFI/1-UXX-134/18

Course requirements:
The course is completed by a written exam (20%).
A minimum of 60% of the semester is required to be admitted to the exam.
During the semester, students implement at least one didactic output (20%), actively participate in exercises (20%), solve assignments during lectures (10%), prepare a term paper (10%), read and report the content of recommended literature (10%), 2 tests during the semester (10%)
The rating is given on a scale:
A: 93-100%, excellent - excellent results,
B: 85-92%, very good - above average standard,
C: 76-84%, good - normal reliable work,
D: 68-75%, satisfactory - acceptable results,
E: 60-67%, sufficient - the results meet the minimum criteria,
Fx: 0-59%, insufficient - additional work required
Scale of assessment (preliminary/final): 80 /0 20

Learning outcomes:
Acquisition of basic theoretical knowledge in didactics, development of knowledge, skills and attitudes associated with the teaching profession, the ability to plan and organize students' learning activities. Students will gain an overview of basic didactic terminology, knowledge prerequisites to view the teaching process as a system whose individual elements (teaching objectives, curriculum content, teaching methods, teaching aids and techniques, organizational forms of teaching, teaching concepts; communication between teacher and students, as well as monitoring and evaluation of the teaching process and teacher preparation for teaching) are closely linked and to be able to use the acquired knowledge in specific planning of the teaching process (creating a "scenario" of the lesson).
They will gain basic habits of working with the class as a group.

Class syllabus:

Didactics as a scientific discipline (subject of research, methods of didactic research, terminology), its position in the system of pedagogical disciplines
Didactics system
Teaching process
Content of education, curriculum, didactic analysis of curriculum
Taxonomy of educational goals
Teaching planning
Teaching principles
Teaching methods, teaching strategies
Testing and evaluation
Learning tasks and didactic tests
Current teaching concepts (project, problematic, programmed, differentiated, group, cooperative, problematic, project, research-oriented, authentic, constructivist, online, electronic, hybrid, modular, integrated thematic (ITV), STEM / STEAM, mastery learning, closed cycle (SVUC), Hejného method
Organizational forms of teaching
Teaching aids and teaching equipment

Recommended literature:

ČAPEK, R. 2015. Modern didactics: Lexicon of teaching and assessment methods. Prague: City.
FERENCOVÁ, J., KOSTURKOVÁ, M. 2020. Chapters from didactics. From learning to teaching. Prešov: Rokus publishing.
KALHOUS, Z., OBST, O. 2001. School didactics. Prague: Portal.
SKALKOVÁ, J. 2007. General didactics. 2nd ed. Prague: City.
KOŽUCHOVÁ, M. et al. 2000. General didactics. Bratislava: Science.
OBDRŽÁLEK, Z. et al. 2003. Didactics for elementary school students. Bratislava: UK.
PASCH, M. et al. 1998. From educational program to lesson. Prague: Portal.
PETLÁK, E. 2016. General didactics. Bratislava: Iris.
PETTY, G. 1996. Modern teaching. Prague: Portal.
PRŮCHA, J. 2002. Modern pedagogy. 3rd ed. Prague: Portal.
TUREK, I. 2014. Didactics. Bratislava: Iura Edition.
TÓTHOVÁ, R., KOSTRUB, D., FERKOVÁ, Š. 2017. Pupil, teacher, teaching. Bratislava: Rokus.

Languages necessary to complete the course:
Slovak, Czech

Notes:

Past grade distribution
Total number of evaluated students: 195

A	B	C	D	E	FX
41,54	27,18	15,38	7,18	1,54	7,18

Lecturers: doc. Mgr. Karolína Miková, PhD., Mgr. Lucia Budinská, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Pavel Chalmovianský, PhD., doc. Mgr. Tibor Macko, PhD., doc. PaedDr. Mária Slavíčková, PhD.