Course descriptions

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COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-236/22	Algorithms and Data Structures

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: 5

Recommended semester: 4.

Educational level: I., II.

Prerequisites: FMFI.KDMFI/1-UIN-241/15 - Programming (3)

Course requirements:
Interim assessment: assessment of short tests (30%) and several smaller projects (20%)
Examination: test and practical exam at the computer
Indicative grading scale: A 88%, B 81%, C 74%, D 67%, E 60%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
After completing the course, students will understand different abstract data types, understand the differences between their different implementations, will be able to estimate the complexity of operations on individual structures, will be able to use more complex data structures and advanced algorithms in programming more complex problems, analyze and compare programs solving the same problem in terms of efficiency.

Class syllabus:
• complexity criteria, program run time calculation, asymptotic notation
• basic abstract data types - list, stack, row
• tree, binary tree, binary search tree
• balanced tree
• priority queue
• chart, searching, backtracking
• dictionary, hashing
• sorting

Recommended literature:
the teacher's own electronic study materials published on the subject's website, resp. in Moodle
Ryant, I .: Object-Oriented Algorithms and Data Structures, 2017, P. 288
Wróblewski, P .: Algorithms: Data Structures and Programming Techniques, Computer Press, 2004, p. 350
Mehlhorn, K., Sanders, P .: Algorithms and data structures: The basic toolbox. Berlin: Springer, 2008

Cormen, T.H., Leiserson, C.E., Rivest, R.L., Syein, C.: Introduction to Algorithms, MIT Press; 3rd edition, 2009

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 72

A	B	C	D	E	FX
25,0	12,5	12,5	20,83	16,67	12,5

Lecturers: doc. RNDr. Zuzana Kubincová, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 15

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-113/22	Computer Networks in the School Environment

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:
Continuous assessment: solving tasks
Indicative assessment scale: A 88%, B 75%, C 65%, D 58%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will have a basic overview of computer networks - the basics of network technology, communication principles, methods of interconnection and security in computer networks.

Class syllabus:
• basic concepts, history, origin and development of computer networks
• OSI reference model
• basics of topology and communication
• network technologies and protocols
• network hardware
• addressing, routing,…
• basics of computer network security
• specifics of network use in the school environment

Recommended literature:
• The teacher's own electronic study materials published on the subject's website or in the Moodle system

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 28

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

Lecturers: doc. RNDr. Ľubomír Salanci, PhD., Mgr. Miroslav Wagner

Last change: 15.03.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-112/22	Computer and Operating Systems

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: 1.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: solving tasks (60%)
Exam: written (40%)
Indicative assessment scale: A 88%, B 75%, C 65%, D 58%, E 50%
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
After completing the course, the student will be able to understand the activities of a simple compiler or interpreter and modify it. They will have an overview of the internal structure of operating systems, with their tasks, the problems they solve and with the theoretical foundations and algorithms they use to solve them. In the language of symbolic addresses it can solve simple algorithmic problems (at the level of working with memory, mathematical operations, comparisons and jumps). Using logic circuits, it can implement simple logic functions. They will understand the principle of computer operation at various levels - programming language, assembler, machine code, hardware layer.

Class syllabus:
• Computer data representation
• Compilation and interpretation
• Symbolic address language
• Implementation of logic functions at the hardware level
• Implementation of memory functions at the hardware level
• Processor, memory, input and output
• Operating system (OS) tasks
• Process management - process and thread, process state diagram, time dependence and its solutions, process and thread communication
• Memory management - simple memory management, virtual memory, segmentation, paging
• Device management - input / output software layers and their tasks
• File management - typical operations over files and directories and their implementation, structure of disks and files on PCs

Recommended literature:

• The teacher's own electronic study materials published on the subject's website

• Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika : Počítačové systémy 1-3: 1.2 Vzdelávanie nekvalifikovaných učiteľov informatiky na 2. stupni ZŠ a na SŠ / Peter Gurský a kol., Bratislava : Štátny pedagogický ústav, 2010

• Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika : Operačné systémy a počítačové siete : 1.3 Ďalšie vzdelávanie kvalifikovaných učiteľov informatiky na 2. stupni ZŠ a na SŠ / Peter Tomcsányi a kol., Bratislava : Štátny pedagogický ústav, 2010

Languages necessary to complete the course:

Slovak

Notes:

Past grade distribution

Total number of evaluated students: 101

A	B	C	D	E	FX
82,18	2,97	4,95	0,99	6,93	1,98

Lecturers: doc. RNDr. Ľubomír Salanci, PhD., Mgr. Miroslav Wagner

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UXX-344/22	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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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., PaedDr. Peter Vankúš, PhD., doc. PaedDr. Klára Velmovská, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-117/10	Databases

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:
Continuous assessment: active participation in educational activities (15%), project (45%)
Examination: test
Indicative grading scale: A 88 %, B 81 %, C 74 %, D 67 %, E 60 %
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
The student will understand the basic concepts of the field, will have an overview of database models, will understand the problems that can arise when designing databases, will be able to use the SQL language to communicate with a database system, will be able to create a simple database.

Class syllabus:
- Databases around us. Spreadsheet and databases.
- Database system. Database models.
- Conceptual design of a database.
- Relational data model.
- Introduction to SQL.
- Normalization and denormalization, database design criteria.
- Databases and database software

Recommended literature:
• the teacher's own electronic study materials published on the course website or in the Moodle system
• Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika : Úvod do databáz : 1.2 Vzdelávanie nekvalifikovaných učiteľov informatiky na 2. stupni ZŠ a na SŠ / Zuzana Kubincová ... [et al.]. Bratislava : Štátny pedagogický ústav, 2010
• An introduction to database systems / C. J. Date. Boston : Pearson/Addison-Wesley, 2004

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution Total number of evaluated students: 70					
A	B	C	D	E	FX
41,43	20,0	18,57	10,0	7,14	2,86
Lecturers: doc. RNDr. Zuzana Kubincová, PhD.					
Last change: 22.06.2022					
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.					

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-280/19	Didactics Seminar in Informatics (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: 4.

Educational level: II.

Prerequisites:

Course requirements:
Interim evaluation: Active participation in lessons + participation in discussions
Test: -
Indicative rating scale: A 90%, B 80%, C 70%, D 65%, E 60%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students are able to analyze and evaluate tasks from the point of view of teaching computer science. They can analyze the lesson in terms of required input knowledge, goals, tasks ordering, methodological procedures used.

Class syllabus:
• Discussions about observations during pedagogical practice.
• Demonstrations of teaching topics verified in practice.

Recommended literature:
• Electronic study materials published on the subject's website or moodle system
• Collection of innovative methodologies for the 2nd degree of university, IT Academy, 2020 (in Slovak)
• Varga, M. et al.: Further education of primary school and secondary school teachers in the subject of informatics, Didactics of Informatics at the University, Bratislava: State Pedagogical Institute, 2011 (in Slovak)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 28

A	B	C	D	E	FX
75,0	10,71	7,14	3,57	0,0	3,57

Lecturers: doc. RNDr. Ľudmila Jašková, PhD., PaedDr. Mgr. Natália Kováčová, PhD.

Last change: 19.02.2025
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-281/22	Didactics Seminar in Informatics (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:
Interim evaluation: Active participation in lessons + participation in discussions (60%), analysis of real lesson of informatics for upper secondary pupils (40%).
Indicative rating scale: A 90%, B 80%, C 70%, D 65%, E 60%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students are able to analyze and evaluate tasks from the point of view of teaching computer science. They can analyze the lesson in terms of required input knowledge, goals, tasks ordering, methodological procedures used.

Class syllabus:
• Discussions about observations during pedagogical practice.
• Demonstrations of teaching topics verified in practice.
• Analysis of teaching lessons and problematic topics from informatics for upper secondary pupils.

Recommended literature:
• Electronic study materials published on the subject's website or moodle system
• Collection of innovative methodologies for the 2nd degree of university, IT Academy, 2020 (in Slovak)
• Lessner, D.: Basics of Informatics for Schools, Jihoče University in České Budějovice, 2020 (in Czech)
• Kalaš et al.: Informatics for Secondary Schools, SPN – Young Summers, 2002 (in Slovak)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 15

A	B	C	D	E	FX
66,67	20,0	6,67	0,0	0,0	6,67

Lecturers: doc. RNDr. Ľudmila Jašková, PhD., PaedDr. Mgr. Natália Kováčová, PhD.
Last change: 19.02.2025
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-120/22	Didactics of Informatics (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: 4.

Educational level: II., N

Prerequisites:

Course requirements:
In-term evaluation: Written assignments, active participation in class, and reports (60 %), didactic outputs, creation and analysis of methodological materials (20 %), study of professional materials (20 %).
The results of problems solved, discussed and active participation in seminars are counted towards the final maximum of 100 points a student can earn. Another regular obligation is weekly writing on the topic studied.
Indicative grading scale: A 90 %, B 82 %, C 74 %, D 67 %, E 60 %
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student acquires a synthesizing view of the issues of teaching informatics and cultivates an overall didactic overview and perception; reflects on the place of informatics in general education, considers the necessary reforms, innovations and obstacles in this context; knows and can compare these contexts in different countries at different stages of development of informatics education; is aware of the differences between the development of digital literacy in education and school informatics - their different and common goals and practices; knows in detail the curricula of the subject informatics at primary and secondary school and its extension forms at secondary school, up to thematriculation (final) exam; knows various didactic procedures for teaching informatics; knows how to deal with various common and specific didactic situations in informatics classes; understands the importance and potential of programming in the implementation of the educational content of other subject areas; knows modern methods of evaluation in informatics; knows various support activities related to informatics education; knows various project and cross-curricular methods suitable for the development of computational thinking; knows modern areas of informatics suitable as attractive topics for secondary school seminars. Thinks about, discusses, and implements productive collaboration between informatics and other subjects.

Class syllabus:
Challenges of modern education, transformation of educational systems in the context of the development of informatics education. General didactics and disciplinary didactics. The role of digital technologies in the process of education and forms of their integration. Digital literacy

and informatics. Different concepts of teaching informatics - at home and abroad. Problems of development of informatics education in different educational contexts. Holistic approach to pupil development and the potential of informatics in it. Modern view of programming and its role in the development of informatics thinking. Educational goals of informatics in different educational systems. Didactic situations in informatics and ways of solving them. Promotion of social constructivism in informatics. Objectives and forms of assessment in informatics education. Forms of cooperation with other teachers and cross-curricular activities.

Recommended literature:

• Kalaš, I. a kol.: Premeny školy v digitálnom veku. Bratislava: Slovenské pedagogické nakladateľstvo, 2013
• the subject lecturerr's own electronic texts
• selection of up-to-date professional materials from the world research literature
• Kalaš, I.: Informatika na križovatke. Didinfo 2021
• up-to-date materials for teaching informatics on the portal of the IT Akadémia and iMyšlení projects, materials of the DVUi project

Languages necessary to complete the course:

Slovak, for the study of some items from the recommended literature, also English as a secondary language

Notes:

Past grade distribution

Total number of evaluated students: 129

A	B	C	D	E	FX
86,05	5,43	2,33	4,65	0,78	0,78

Lecturers: prof. RNDr. Ivan Kalaš, PhD.

Last change: 23.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-219/22	Didactics of Informatics (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: 5.

Educational level: II., N

Prerequisites:

Course requirements:
Written assignments, active participation in class, reports, didactic outputs, creation and analysis of methodological materials, study of professional materials.
The results of problems solved, discussed and active participation in seminars are counted towards the final maximum of 100 points a student can earn. Another regular obligation is weekly writing on the topic studied.
Indicative grading scale: A 92 %, B 84 %, C 76 %, D 68 %, E 60 %
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Learning outcomes:
This course is an immediate continuation and part of the course Didactics of Informatics (1). The student will further develop and deepen the knowledge and skills acquired during the first part of the course. It will delve deeper into the concepts and issues involved in teaching informatics, this semester with a particular emphasis on secondary school. Further develops a synthesizing view of issues in computer science teaching and cultivates overall didactic insight and perception; reflects on the place of informatics in general education, considers needed reforms, innovations and obstacles in this context; knows and can compare these contexts in different countries at different stages of development of informatics education; is aware of the differences between the development of digital literacy in education and school informatics - their different and common goals and practices; knows in detail the curricula of the subject informatics at the primary and secondary school level and its extension forms at the secondary school level, up to the matriculation (final) examination; knows various didactic procedures for teaching informatics; knows how to deal with various common and specific didactic situations in informatics classes; understands the importance and potential of programming in the implementation of the educational content of other subject areas; knows the modern methods of informatics classroom teaching; knows the various support activities related to informatics education; knows the various project and cross-curricular methods suitable for the development of computational thinking; knows the modern areas of informatics suitable as attractive topics for secondary school seminars. Thinks about, discusses and implements productive collaboration between informatics and other subjects

Class syllabus:

Didactic situations in the teaching of informatics at the 2nd level of primary and secondary school. Preparation, implementation and evaluation of the lesson. Comparison of actual curriculum with educational contents in some other countries with developed informatics education. Relationship between methodology and didactics of informatics. Assessment in the subject of informatics, its different forms and functions. Matriculation (final) examination in informatics, matriculation requirements, analysis of matriculation questions. Work in informatics classes with talented pupils. Project teaching in informatics and cross-curricular projects.

Recommended literature:

Recommended literature:

• Kalaš, I. a kol.: Premeny školy v digitálnom veku. Bratislava: Slovenské pedagogické nakladateľstvo, 2013

• the subject lecturerr's own electronic texts

• selection of up-to-date professional materials from the world research literature

• Kalaš, I.: Informatika na križovatke. Didinfo 2021

• up-to-date materials for teaching informatics on the portal of the IT Akadémia and iMyšlení projects, materials of the DVUi project

Languages necessary to complete the course:

Slovak, for the study of some items from the recommended literature, also English as a secondary language

Notes:

Past grade distribution

Total number of evaluated students: 108

A	B	C	D	E	FX
87,04	7,41	4,63	0,0	0,0	0,93

Lecturers: prof. RNDr. Ivan Kalaš, PhD.

Last change: 23.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

STATE EXAM DESCRIPTION

Academic year: 2025/2026	
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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 202

A	B	C	D	E	FX
89,6	5,94	2,48	0,99	0,0	0,99

Lecturers: doc. PaedDr. Mária Slavíčková, PhD.

Last change: 15.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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., PaedDr. Peter Vankúš, PhD.

Last change: 17.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 169

A	B	C	D	E	FX
67,46	20,12	10,06	2,37	0,0	0,0

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

Last change: 15.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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., PaedDr. Peter Vankúš, PhD.

Last change: 17.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 102

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-108/15	Didactics of Programming (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., N

Prerequisites:

Course requirements:
Continuous assessment: The student can get 50% of points for the preparation of topics for computer science lessons, another 25% of points for the preparation of detailed methodological material for teachers. He can get the remaining 25% of points for the didactic output.
Indicative assessment scale: A 92%, B 84%, C 77%, D 68%, E 60%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students are able to analyze and evaluate programming languages, environments, textbooks and other materials from the perspective of programming didactics. They will compile and implement a lesson focused on programming in primary school with regard to the stages of the cognitive process.

Class syllabus:
• Programming languages and environments in terms of programming didactics
• Basic programming constructions and their order in teaching programming for different programming languages
• Programming in the state educational program
• Teaching programming in primary school
• Didactics of teaching the topic of sequence of commands
• The topic of the cycle and various didactic procedures of its teaching
• Variables and students' ability to understand their meaning and how they are used in programming
• Construction of a conditional statement in programming languages, logical conditions and didactic procedures suitable for mastering a conditional statement
• Testing students in teaching programming
• The importance of student evaluation in didactics, project teaching, peer evaluation of programming projects

Recommended literature:
• The teacher's own electronic study materials published on the subject's website, resp. in Moodle
• Ľubomír Salanci [et al.] Programming Didactics 1: Further education of qualified computer science teachers at the 2nd level of primary school and at secondary school. - 1st ed. - Bratislava:

Štátny pedagogický ústav, 2010. - 36 s. - (In-service training of primary and secondary school teachers in computer science)
• Ľubomír Salanci [et al.]: Didactics of programming 2: Further education of qualified computer science teachers at the 2nd level of primary and secondary schools. - 1st ed. - Bratislava: Štátny pedagogický ústav, 2010. - 36 s. - (In-service training of primary and secondary school teachers in computer science)
• Vaníček, J., Nagyová, I., Tomcsányiová, M .: Programming in Scratch for the 2nd level of primary school. University of South Bohemia in České Budějovice, 2020. • Černochová, M., Vaňková, P., Štípek, J .: Scratch programming for advanced - projects for the 2nd grade of primary school. University of South Bohemia in České Budějovice, 2020.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 65

A	B	C	D	E	FX
72,31	21,54	4,62	1,54	0,0	0,0

Lecturers: PaedDr. Mgr. Natália Kováčová, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-109/22	Didactics of Programming (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., N

Prerequisites:

Recommended prerequisites:
2-UIN-108/22 Didactics of Programming (1)

Course requirements:
Interim evaluation: active participation (20%), homeworks (40%), didactic presentation (40%)
Test: -
Indicative rating scale: A 92%, B 84%, C 77%, D 68%, E 60%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students are able to analyze and evaluate algorithmic tasks from the point of view of didactics of programming. They design and implement a didactic sequence of steps to support students solving an algorithmic problem. They will design and implement a lesson (possibly a sequence of lessons) focused on programming in secondary school with regard to the stages of the cognitive process and bloom taxonomy.

Class syllabus:
• Programming in the official curriculum – programming in lower grades of grammar school and programming as part of the greduate examination
• Cognitive process and Bloom taxonomy of educational goals – applications in teaching programming
• Analysis of programming languages and environments in terms of their suitability for teaching programming
• Textbooks and methodological materials
• Different approaches to teaching programming
• Abstraction levels in solving a complex algorithmic task
• Creation and analysis of tasks from programming for the graduate exam and evaluation of the student's knowledge at the graduate exam.
• Ordering of topics in the field of Algorithmic problem solving and their teaching in individual years of upper secondary education

Recommended literature:

• Electronic study materials published on the subject's website or moodle system
• Salanci, Ľ. A kol.: Didactics of programming for SS 1, Further education of primary and secondary school teachers in the subject of informatics, Bratislava: l State Pedagogical Institute, 2011 (in Slovak)
• Salanci, Ľ. A kol.: Didactics of programming for SS 2, Further education of primary and secondary school teachers in the subject of informatics, Bratislava: l State Pedagogical Institute, 2011 (in Slovak)
• Blaho, A. et al.: Programming in the Python for secondary schools (in Slovak)
• Mészárosová, E.: PYTHON AND TURTLE GRAPHIC, Methodological material for teaching the basics of programming for gymnasiums, Library and Publishing Centre FMFI UK, Bratislava, 2017 (in Slovak)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 61

A	B	C	D	E	FX
57,38	16,39	11,48	4,92	4,92	4,92

Lecturers: doc. RNDr. Ľudmila Jašková, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 107

A	B	C	D	E	FX
71,96	14,95	8,41	3,74	0,93	0,0

Lecturers: doc. PaedDr. Monika Tomcsányiová, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 64

A	B	C	D	E	FX
64,06	14,06	9,38	7,81	1,56	3,13

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

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 101

A	B	C	D	E	FX
74,26	16,83	5,94	1,98	0,99	0,0

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

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 229

A	B	C	D	E	FX
77,29	10,48	5,24	1,75	1,31	3,93

Lecturers: Mgr. Mária Čujdíková, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 179

A	B	C	D	E	FX
69,27	13,97	7,26	3,35	2,23	3,91

Lecturers: PaedDr. Andrea Hrušecká, PhD., PaedDr. Roman Hrušecký, PhD., PaedDr. Mgr. Natália Kováčová, PhD.
Last change: 22.06.2022
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

STATE EXAM DESCRIPTION

Academic year: 2025/2026	
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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026	
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: 45

A	ABS	B	C	D	E	FX
91,11	0,0	4,44	2,22	0,0	2,22	0,0

Lecturers: doc. RNDr. Zuzana Kubincová, PhD., doc. RNDr. Pavel Chalmovianský, PhD., PaedDr. Peter Vankúš, PhD., doc. PaedDr. Klára Velmovská, PhD., prof. RNDr. Ivan Kalaš, PhD.

Last change: 22.08.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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., doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Klára Velmovská, PhD., doc. RNDr. Pavel Chalmovianský, PhD., PaedDr. Peter Vankúš, PhD., RNDr. Martina Bátorová, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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., doc. RNDr. Zuzana Kubincová, PhD., doc. RNDr. Pavel Chalmovianský, PhD., PaedDr. Peter Vankúš, PhD., RNDr. Martina Bátorová, PhD.
Last change: 20.06.2022
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 24

A	B	C	D	E	FX
33,33	33,33	12,5	4,17	16,67	0,0

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

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 291

A	B	C	D	E	FX
75,26	9,62	4,81	1,37	1,03	7,9

Lecturers: Mgr. Aneta Barnes

Last change: 11.04.2024
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 41

A	B	C	D	E	FX
97,56	0,0	0,0	0,0	0,0	2,44

Lecturers: RNDr. Monika Dillingerová, PhD.

Last change: 17.03.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 482

A	B	C	D	E	FX
48,76	19,09	17,01	8,09	2,07	4,98

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 120

A	B	C	D	E	FX
45,83	25,83	18,33	5,83	0,83	3,33

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 828

A	B	C	D	E	FX
37,56	25,48	18,6	9,18	2,78	6,4

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

Last change: 21.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 541

A	B	C	D	E	FX
37,89	19,59	19,59	12,38	3,51	7,02

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

Last change: 21.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 184

A	B	C	D	E	FX
44,02	23,91	20,11	6,52	2,17	3,26

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

Last change: 21.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 21.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

STATE EXAM DESCRIPTION

Academic year: 2025/2026	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KDMFI/2-UIN-951/15	**Course title:** Informatics and Didactics of Informatics
Number of credits: 3	
Educational level: II.	
State exam syllabus:	
Last change: 02.06.2015	
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.	

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-268/22	Information Systems

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: 5.

Educational level: II.

Prerequisites:

Course requirements:
Interim evaluation: Solving specified tasks (85%) + contributions to discussion forums, project development (15%)
Exam: -
Indicative rating scale: A 90%, B 80%, C 70%, D 65%, E 60%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will understand the basic concepts in the field of information systems. They will know the different types of information systems used in different institutions and at different levels of management. They will gain practical experience in the use of existing information systems, with particular emphasis on school information systems. Students learn to specify and assess their characteristics. They will briefly familiarize themselves with the process of designing, creating and maintaining the information system.

Class syllabus:
• The information society and its development in the history of mankind
• System and model of the system, information system and its characteristics
• Information systems at different levels of management (transaction systems, management systems, decision support systems, information systems for top management, business intelligence systems)
• Information systems applications (school IS, geographic IS, business IS)
• Design, development and maintenance of information systems (examples from practice).

Recommended literature:
• Electronic study materials published on the subject's website or moodle system
• Stair, R.,Reynolds G.: Principles of Information Systems, Thirteanth Edition, Thomson Course Technology, Boston, 2018, ISBN-10: 9781305971776.....
• Mihók P., Révészová, L.: Information Systems for Economists, Faculty of Economics of the Technical University of Košice, 2006, ISBN 80-8073-497-6 (in Slovak)
• Buchalceva, A.: Methodology of Information Systems Building, Oeconomica, 2009 , ISBN: 9788024515403 (in Slovak)

• Kalaš I. et al.: School transformations in the digital age, SPN - Young Summers, Bratislava, 2013, ISBN: 9788010024094 (in Slovak)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 27

A	B	C	D	E	FX
81,48	11,11	3,7	0,0	3,7	0,0

Lecturers: doc. RNDr. Ľudmila Jašková, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 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: 8

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

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

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-524/22	Introduction to Information Security

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: I., II.

Prerequisites: FMFI.KDMFI/1-UIN-141/22 - Programming (2) or FMFI.KDMFI/1-UIN-141/15 - Programming (2)

Course requirements:
Continuous assessment: The student can get 80% points for active participation in seminars and problem solving.
Exam: A student can get 20% of points for completing a written test.
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 80/20

Learning outcomes:
The student:
- acquire terminology in the field of IB
- can identify and describe security vulnerabilities and risks
- manages to imitate a fictitious attacker and demonstrate a simple attack

Class syllabus:
- Basic terminology on IB
- Information security vs. privacy protection
- Methods of social engineering
- Basics of computer networks
- Network attacks
- Symmetric and asymmetric cryptography
- Certificates
- Passwords and hashing
- Code vulnerabilities
- Protective mechanisms

Recommended literature:
Zeman, M., Oster, J., Blšák, M., Chromek D .: Textbook of information security for secondary vocational schools and grammar schools
Tomková, J., Kubovič, O., Kučera, P., Daubner, J .: Handbook on digital security for primary and secondary school teachers

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: 26

A	B	C	D	E	FX
61,54	23,08	7,69	7,69	0,0	0,0

Lecturers: prof. RNDr. Ivan Kalaš, PhD., Mgr. Tomáš Kubla

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-423/22	Introduction to Solving Computer Science Problems

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: 4.

Educational level: I., II.

Prerequisites: FMFI.KDMFI/1-UIN-322/22 - Informatics (2)

Course requirements:
Continuous assessment: The student can get 30% of points for work in seminars, 20% of points for independent creative work. He can get 50% of points for solving homework.
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student:
- gain practical experience with programming solutions to more complex IT tasks
- is able to discuss different approaches to solving the presented IT problems
- analyzes various approaches to solving the presented IT problems, considers marginal cases
- is able to identify what methods to use to solve specific tasks and design and program their own solution
- can evaluate the correctness of solutions, their algorithmic complexity and efficiency

Class syllabus:
- naive approaches to problem solving
- greedy algorithms
- programming solution of logic problems
- Divide and rule
- dynamic programming
- recursion
- backtracking
- state space search
- hashing
- optimization of algorithms

Recommended literature:
Algorithmic Puzzles / Anany Levitin, Maria Levitin. Oxford University Press Inc, 2011
Task archive on the website: www.prask.ksp.sk
Task archive on the website: www.ksp.sk

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: 29

A	B	C	D	E	FX
48,28	31,03	17,24	3,45	0,0	0,0

Lecturers: PaedDr. Daniela Bezáková, PhD., doc. PaedDr. Monika Tomcsányiová, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 18

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 184

A	B	C	D	E	FX
69,02	15,76	6,52	3,8	1,63	3,26

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

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 175

A	B	C	D	E	FX
88,0	5,14	1,14	0,57	0,57	4,57

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

Last change: 17.03.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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., PaedDr. Peter Vankúš, PhD.
Last change: 17.03.2022
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-144/22	Methods of Creating Efficient Algorithms

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:
Continuous assessment: homework (50%), active participation (50%)
Homework: the student chooses one of the assigned tasks and writes it out in writing.
Active participation: In the class, students present their solutions to others, resp. the presenter tries to simulate with others who did not solve the given task, as if they were high school students
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 acquainted with the methods of creating efficient algorithms and will be able to design and use algorithms for selected problems.

Class syllabus:
• Complexity of algorithms, complexity analysis
• Methods of creating efficient algorithms (divide and conquer, greeds, dynamic programming, methods based on state space search)
• Search for a pattern in the text
• Graph algorithms
• Algorithms for NP difficult problems - probabilistic, approximate

Recommended literature:
• Zbierka úloh Korešpondenčného seminára z programovania (1983-1997) / Michal Winczer. Bratislava : Metodické centrum, 1997
• Zbierka úloh Korešpondenčného seminára z programovania 1983-2001 / Zostavovateľ Michal Winczer. Bratislava : Fakulta matematiky, fyziky a informatiky UK, 2001
• Teacher's own electronic study materials published on the course website or in the Moodle systeme

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 25

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

Lecturers: RNDr. Michal Winczer, PhD., doc. RNDr. Zuzana Kubincová, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-238/15	Mobile Platform Programming for Secondary Schools

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: 5.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: The student can get 50% points for active participation in seminars and task development. He will get another 50% of points for the design and implementation of the project.
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
• has an overview of programming environments that are suitable for programming applications for mobile platforms
• is able to recognize which environment is suitable for high school students
• knows and is able to apply knowledge of other programming languages in a language that is suitable for programming mobile devices
• is able to assess which applications in the selected programming tool are suitable and reasonably demanding for high school students
• programs moderately demanding projects in the selected environment

Class syllabus:
• Programming languages and environments for mobile devices
• Overview of mobile platforms and programming approaches for them
• Programming tools for programming mobile applications that are suitable for high school students.
• Multi-platform development environment versus platform-specific development environment
• Cycle and its use in the selected programming language
• Create and use variables in simple tasks for mobile devices
• Conditional statement construction
• Project specification and design
• Project implementation, debugging
• Project presentation, evaluation and project discussion

Recommended literature:
The teacher's own electronic study materials published on the subject's website, resp. in Moodle

Beginning Android 4 application development / Wei-Meng Lee; Chaim Krause. Indianapolis, Ind. : Wrox / John Wiley & Sons, 2012
MIT App Inventor, website and educational materials from www.appinventor.mit.edu

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 15

A	B	C	D	E	FX
53,33	26,67	6,67	0,0	0,0	13,33

Lecturers: doc. PaedDr. Monika Tomcsányiová, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-346/15	Multimedia

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.

Educational level: I., II.

Prerequisites:

Course requirements:
Continuous assessment: Students can get 100% points for completing assignments on individual topics.
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students are able to create and edit a variety of multimedia content. They can use digital tools to process graphics, audio and video. They understand the principles of digital media processing. They are able to integrate outdoor activities into the classroom using mobile applications and design assignments for this type of learning activity. They are able to use virtual and augmented reality in education.

Class syllabus:
- creation of graphic design using online tools
- photo editing
- work with 3D graphics
- working with vector graphics in a children's programming environment
- collaborative creation and verification of outdoor educational activities using a mobile application
- Collaborative video creation and processing using more complex editing
- work with sound in video editor
- getting acquainted with the possibilities of using virtual and augmented reality in education

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution Total number of evaluated students: 32					
A	B	C	D	E	FX
75,0	9,38	9,38	6,25	0,0	0,0
Lecturers: Mgr. Mária Čujdíková, PhD., doc. PaedDr. Monika Tomcsányiová, PhD.					
Last change: 22.06.2022					
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.					

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 201

A	B	C	D	E	FX
89,55	1,49	1,49	0,0	2,99	4,48

Lecturers: Mgr. Xenia Daniela Poslon, PhD.

Last change: 06.09.2023

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 201

A	B	C	D	E	FX
89,55	1,49	1,49	0,0	2,99	4,48

Lecturers: Mgr. Xenia Daniela Poslon, PhD.

Last change: 06.09.2023

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 144

A	B	C	D	E	FX
84,03	7,64	1,39	2,08	2,08	2,78

Lecturers: doc. RNDr. Martin Takáč, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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., doc. Mgr. Karolína Miková, PhD., PaedDr. Mgr. Natália Kováčová, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 43

A	B	C	D	E	FX
76,74	13,95	6,98	0,0	2,33	0,0

Lecturers: Mgr. Štefan Zolcer, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 1911

A	B	C	D	E	FX
97,65	0,63	0,05	0,0	0,0	1,67

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

Last change: 15.03.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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

Last change: 15.03.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 1454

A	B	C	D	E	FX
98,56	0,41	0,07	0,0	0,07	0,89

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

Last change: 15.03.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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

Last change: 15.03.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 20

A	B	C	D	E	FX
95,0	0,0	0,0	0,0	0,0	5,0

Lecturers: PaedDr. Peter Vankúš, PhD.

Last change: 14.03.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-140/22	Programming (1)

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: 1.

Educational level: I., II.

Prerequisites:

Course requirements:
Continuous evaluation: the course is scored, the maximum number of points for the course is 150. The student gains continuous (weekly) points for solved problem tasks (70 pts), two interm tests (20 pts total), solved project (20 pts), active work during the semester (10 pts), and for solving assigned programming problems on the exam (30 pts). The student must earn a minimum of 58 points during the semester.
Detailed grading requirements will be specified by the instructor at the beginning of the semester.
Exam: In the form of solving a set of programming problems at the computer.
A 92%, B 84%, C 76%, D 68%, E 60%.
Scale of assessment (preliminary/final): 70/30The results of problems solved and active participation in seminars are counted towards the final maximum of 60 points a student can earn during the semester. An additional 10 points can be earned for completing a more complex research-oriented project (within a specified time, essentially before the final exam). The remaining 30 points is the maximum possible score for solving a set of problems on the exam. The time for solving it is usually 120 minutes, directly behind the computer.

Learning outcomes:
Develop a systematic understanding of the basics of programming in a programming language appropriate to the state of knowledge. Develop understanding of basic programming concepts and practices that is characterized by the ability to: · program the solution of a given problem, explain the function of the individual elements in it at the level of commands, control structures and the whole. Explain the strategy (algorithm) of the learner‘s solution, debug the solution, know how to modify it according to the requirements, · analyse the program code (created by themselves or by someone else), verify its behaviour, recognise the basic concepts and procedures in it (also comparing it with other programming environments that students have already encountered in primary and secondary school, including programmable robotic building blocks and toys), · explore a programming solution (created by someone else) using the decomposition method, to verify its behaviour, in various cases, · compare and explain the differences in various solutions of the same or similar problem.

Class syllabus:

the environment and options for direct control, the executor and its settings, the use and modification of settings,
elements of the programming language, command with no input, command with one or more inputs, groups of commands and their execution and reexecution,
creation of a user‘s command, its definition, use and modification, use of randomness, generation of random values and their use with various constraints,
creating and using an expression as an input to a command,
other control structures,
conditions and visualizing their changing values, use of conditions in computation,
working with multiple sprites, cooperation and communication between multiple sprites, programmed animations,
requested input and working with input value; variable and working with it,
creating and using composite data, working with a list, data visualisation

Recommended literature:
the lecturer's own electronic study materials published on the course website or in the Moodle system
Vickers, V.: How to Think Like a Programmer. Course Technology, 2008, 611 p.
Vaníček, J., Nagyová, I., Tomcsányiová, M.: Programování ve Scratch pro 2. stupeň základní školy. University of South Bohemia in České Budějovice, 2020.
Černochová, M., Vaňková, P., Štípek, J.: Programování ve Scratch pro pokročilé – projekty pro 2. stupeň základní školy. University of South Bohemia in České Budějovice, 2020. · Blaho, A., Salanci, Ľ., Šimandl, V.: Programování v jazyce Python pro střední školy. University of South Bohemia in České Budějovice, 2020. · Guniš, J., Šnajder, Ľ.: Programovanie v Pythone 1. Pavol Jozef Šafárik University in Košice, 2021, 170 p.

Languages necessary to complete the course:
Slovak, for the study of some materials secondary also English

Notes:

Past grade distribution
Total number of evaluated students: 110

A	B	C	D	E	FX
43,64	16,36	16,36	4,55	6,36	12,73

Lecturers: prof. RNDr. Ivan Kalaš, PhD.

Last change: 23.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-141/22	Programming (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: FMFI.KDMFI/1-UIN-140/22 - Programming (1) or FMFI.KDMFI/1-UIN-140/15 - Programming (1)

Course requirements:
Continuous assessment: assessment of homework(5%), short tests(40%), a project (10%) and one final test (15%)
Examination: practical programming examination
Indicative grading scale: A 88%, B 81%, C 74%, D 67%, E 60%
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
After completing the course, students will have mastered the basics of programming in an object-oriented programming language, will understand the syntax and semantics of simple program constructs, will be able to use the basic constructs and basic data structures of the programming language and also basic algorithms in creating programs to solve simple problems. They will be able to analyse programming code and detect errors in it.

Class syllabus:
Brief outline of the course:
programming language environment, basic concepts and programming constructs (variable, command, program, assignment, conditional statements, loops, input, output)
basic data types and data structures of the language (integer type, decimal type, logical type, string, ...)
basic work with graphics, generation and use of random values
functions without return value and with return value
basic structured types and files
events in the graphical area
basic algorithms with numbers, on structured types, with graphical commands, for user interaction, etc.
basics of object-oriented programming (class, object, encapsulation, inheritance)

Recommended literature:

the teacher's own electronic study materials published on the course website or in the Moodle system
Blaho, A., Salanci, Ľ., Šimandl, V.: Programování v jazyce Python pro střední školy. Jihočeská univerzita v Českých Budějovicích, 2020.
Guniš, J., Šnajder, Ľ.: Programovanie v Pythone 1. Univerzita Pavla Jozefa Šafárika v Košiciach, 2021, 170 p.
Kučera, P.: Programujeme v Pythone, e-kniha, 2017

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 89

A	B	C	D	E	FX
40,45	20,22	17,98	11,24	0,0	10,11

Lecturers: doc. RNDr. Zuzana Kubincová, PhD., PaedDr. Andrea Hrušecká, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-241/15	Programming (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: FMFI.KDMFI/1-UIN-141/22 - Programming (2) or FMFI.KDMFI/1-UIN-141/15 - Programming (2)

Course requirements:
Continuous assessment: assessment of homework (5%), short tests (40%), a project (10%) and one final test (15%)
Examination: practical programming examination
Indicative grading scale: A 88%, B 81%, C 74%, D 67%, E 60%
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
After completing the course, students will be able to use more complex data types and program constructs of the object-oriented programming language and basic algorithms for working with them, they will better understand the principles of object-oriented programming, they will be able to program the solution of more complex problems and analyze more complex programs.

Class syllabus:
- other data types and program constructs
- recursion
- polymorphism
- working with images and animation
- linked structures
- algorithms on more complex structures

Recommended literature:
• the teacher's own electronic study materials published on the course website or in the Moodle system
• Pecinovský, R.: Začíname programovat v jazyku Python. Grada, 2020, S. 272
• Guniš, J., Šnajder, Ľ.: Programovanie v Pythone 1. Univerzita Pavla Jozefa Šafárika v Košiciach, 2021, S. 170
• Kučera, P.: Programujeme v Pythone, e-kniha, 2017

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 73

A	B	C	D	E	FX
49,32	17,81	13,7	6,85	5,48	6,85

Lecturers: doc. RNDr. Zuzana Kubincová, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-262/22	Programming Competitions

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: 6.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: active participation in class (25%), homework (75%)
Students know how to search for basic information about the competition, find out for whom it is intended, rules, course, get acquainted with the types of tasks that are typical for the competition.
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%

Learning outcomes:
Students will have an overview of computer competitions for primary and secondary school, respectively. with competitions that have no restrictions on participants. They will know the characteristics of these competitions in order to be able to guide the students in which to participate. They will know the difficulty level of the tasks in each competition. They will know about possible sources of ideas for interesting examples in the competition archives.

Class syllabus:
233 / 5 000
Výsledky prekladov
• Overview of IT competitions with a focus on programming, resp. Troubleshooting.
• Get acquainted with their rules, organization, target group and other specifics.
• Demonstrations of problems from these competitions and their solutions.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 34

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

Lecturers: RNDr. Michal Winczer, PhD., doc. PaedDr. Monika Tomcsányiová, PhD.

Last change: 22.06.2022
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-327/22	Programming Etudes (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: 5.

Educational level: I., II.

Prerequisites:

Course requirements:
Continuous assessment: The student can get 50% points for the elaboration of tasks at the seminar, another 50% for the design, implementation and presentation of the project.
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student:
- can assess whether the programming environment is suitable for a given level of education
- uses more advanced techniques of the programming environment for students at the 2nd level of elementary school
- Designs and programs projects and small educational applications
- when solving problems, he can choose the right programming technique and implement it
- can decide whether the programming technique is suitable for the given level of education

Class syllabus:
- programming techniques: mouse click on an object on the stage
- data structure list and its use in the programming environment
- programming techniques: the use of data list structure in solving tasks
- programming techniques: moving the object using the keys
- programming techniques enabling animations in the programming environment
- programming techniques leading to an object-oriented approach
- more advanced programming techniques leading to parallelism
- project specification and design
- project implementation, error tuning
- project demonstration, evaluation and project discussion

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: 64

A	B	C	D	E	FX
73,44	9,38	6,25	6,25	3,13	1,56

Lecturers: doc. PaedDr. Monika Tomcsányiová, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-325/22	Programming Etudes (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: 6.

Educational level: I., II.

Prerequisites:

Course requirements:
Continuous assessment: 60% elaboration of assignments at the seminar, homework, 40% final project.
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
The student:
- designs and implements several graded programming projects from the teacher's practice.
- can find errors in the source code, e.g. its stepping, checklists.
- is able to discuss several solutions to the same programming problem.
- is able to implement some solutions.

Class syllabus:
- Programming techniques for solving problems using cycles, conditions and fields.
- Creating graded projects to solve more complex tasks.
- Use of recursion to implement different types of sorting, visualization.
- Solving high school programming tasks from various competitions
- project specification and design
- project implementation, error tuning
- project demonstration, evaluation and project discussion

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: 60

A	B	C	D	E	FX
81,67	8,33	1,67	5,0	0,0	3,33

Lecturers: doc. PaedDr. Monika Tomcsányiová, PhD., PaedDr. Andrea Hrušecká, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-351/17	Programming in JavaScript

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: I., II.

Prerequisites:

Course requirements:
The student can get 50% points for studying and applying the features of the JavaScript programming language. He can get another 50% of points for programming the assigned tasks during the seminars.
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 the commands of JavaScript, a language that is suitable for creating applications that work in a web browser
- Understands how to embed JavaScript code in an html page
- recognizes and explains the function of individual elements that are part of the html code and whose actions are linked to JavaScript
- is able to write and debug its problem solution in JavaScript language

Class syllabus:
Course contents:
Basic structures of JavaScript: variables, Boolean expressions
JS and html collaboration
JS and functions
Design for repetition
Branching in JS
One-dimensional arrays, array rendering
Two-dimensional arrays, Life game
Mouse events - click
Mouse events - dragging
Special event customization and syntax for mobile devices
Working with images in JS

Recommended literature:

Tomcsányiová, M .: JavaScript: from Introduction to Games, internal material of the Department of Didactics of the IFI, FMFI Comenius University in Bratislava, 2021
JavaScript website
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: 49

A	B	C	D	E	FX
61,22	6,12	10,2	12,24	2,04	8,16

Lecturers: doc. PaedDr. Monika Tomcsányiová, PhD.

Last change: 23.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-349/22	Programming of Application for WEB

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: 6.

Educational level: I., II.

Prerequisites: FMFI.KDMFI/1-UIN-355/22 - Introduction to Web Documents Formation or FMFI.KDMFI/1-UIN-355/10 - Introduction to Web Documents Formation

Course requirements:
Continuous assessment: practical tasks (100%)
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 be able to create a simple web application on the server side with the possibility of personalized access to individual parts of the application. The data will be stored in a database.

Class syllabus:
- Server-side web applications
- Introduction to PHP
- Basic constructions of language (1) - variables, constants, strings, operators, conditions, cycles
- Basic language constructions (2) - working with date and time, fields, functions for working with fields and strings
- Reuse code
- Form processing, processing and treatment of inputs
- SESSION, COOKIES
- Introduction to working with a database
- Basic queries to the database - SELECT, INSERT, UPDATE, DELETE
- Linking PHP to a database
- Working with multiple tables at once

Recommended literature:
PHP and MySQL: Web Application Development / Luke Welling, Laura Thomson; Translation by Jan Kuklínek. Prague: SoftPress, 2005
We program PHP professionally / Jesus Castagnetto ... [et al.]; Translation by Ludvík Roubíček. Brno: Computer Press, 2004
Own electronic texts of the subject, published via the subject's website, resp. Moodle system.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 41

A	B	C	D	E	FX
34,15	17,07	21,95	21,95	2,44	2,44

Lecturers: PaedDr. Roman Hrušecký, PhD.

Last change: 23.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-236/15	Programming of Application for WEB (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: 3.

Educational level: II.

Prerequisites:

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

Learning outcomes:
The student will be able to create a more complex educational web application using databases, or other repositories and modern technologies for the development of dynamic web applications.

Class syllabus:
- HTML5 - Canvas, Web Storage, Media, Drag&Drop
- AJAX - manipulation of objects with their properties (also CSS), effects, event handling, efficient work with forms, etc.
- Two-way communication between server and client
- JQuery, JQueryUI, Vue.js, or other suitable framework

Recommended literature:
• own electronic texts published on the website or in the Moodle environment
• actual documentation for each technology
• w3schools.com

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 19

A	B	C	D	E	FX
26,32	15,79	10,53	15,79	26,32	5,26

Lecturers: PaedDr. Roman Hrušecký, PhD.

Last change: 21.06.2022
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-250/00	Propedeutics of Informatics Education (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: 1.

Educational level: I., II., N

Prerequisites:

Course requirements:
active participation in seminars and at least 50% of the semester
Continuous assessment: active participation in seminars (50%) and homework (30%)
Final test (20%)
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 80/20

Learning outcomes:
The student:
- knows the content and scope of the subject of informatics determined by the State Educational Program for various types and levels of schools
- will be able to design and evaluate curricula for the subject Informatics
- is able to identify the basic steps in creating the educational content of the lesson
- can interpret and evaluate available methodological materials
- acquires basic pedagogical habits

Class syllabus:
- Computer science teacher
- Informatics in other countries
- Curriculum analysis using Brunner's concept
- Phases of teaching in computer science teaching
- Educational goals of the subject of informatics at the 2nd level of elementary school and high school
- Educational goals of individual topics of informatics
- School curricula and curricula
- Project teaching
- Work with methodical materials
- Planning and implementation of evaluation in the subject of informatics

Recommended literature:
own electronic texts published

From educational program to teaching lesson / Marvin Pasch ... [et al.]; translated by Milan Koldinský. Prague: Portal, 2005
Školní didaktika / Zdeněk Kalhous, Otto Obst ... [et al.]. Prague: Portal, 2002
Transformations of the school in the digital age / Ivan Kalaš and team. Bratislava: Slovenské pedagogické nakladateľstvo - Mladé letá, 2013

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 204

A	B	C	D	E	FX
77,45	7,84	6,37	2,94	0,49	4,9

Lecturers: Mgr. Jakub Krcho, doc. Mgr. Karolína Miková, PhD.

Last change: 21.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-251/00	Propedeutics of Informatics Education (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: 2.

Educational level: I., II., N

Prerequisites: FMFI.KDMFI/1-UIN-250/00 - Propedeutics of Informatics Education (1)

Course requirements:
Interim evaluation: active participation in seminars (presentation of preparation (50%) and feedback (50%))
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 have experience in using theoretical knowledge in creating preparations for the lesson.
He will be able to critically evaluate the design and implementation of the lesson and express his opinion in the discussion.
The student will have built some basic pedagogical habits.

Class syllabus:
Course contents:
Students will create preparations for computer science lessons for the following topics:
Anti-virus and anti-spyware programs
Internet security and risks
Working with tables
Working with presentations
Working with graphics
Working with sound
Working with text
Working with a website
Encryption
Coding
Working with multimedia
Communication tools
Web search
In the form of a simulation, the lessons will test the preparations made and then discuss them.

Recommended literature:

From educational program to teaching lesson / Marvin Pasch ... [et al.]; translated by Milan Koldinský. Prague: Portal, 2005

Informatics for secondary schools: učebnica / Ivan Kalaš ... [et al.]. Bratislava: Slovenské pedagogické nakladateľstvo, 2005

Transformations of the school in the digital age / Ivan Kalaš and team. Bratislava: Slovenské pedagogické nakladateľstvo - Mladé letá, 2013

Work with graphics: thematic notebook for the 1st year of grammar schools, for the fifth of eight-year grammar schools / Ľubomír Salanci. Bratislava: Slovenské pedagogické nakladateľstvo, 2000

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: 177

A	B	C	D	E	FX
74,01	6,78	8,47	2,26	2,82	5,65

Lecturers: Mgr. Jakub Krcho, doc. Mgr. Karolína Miková, PhD.

Last change: 21.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 667

A	B	C	D	E	FX
22,49	16,34	23,54	17,39	16,04	4,2

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

Last change: 16.09.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-237/22	Robotics in Education

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:
Interim evaluation: creation of activities during seminars (50%) and methodological materials and parallel testing of these activities for selected robotic toys (50%)
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will be at the end of the semester:
- Able to work with one or two robotic toys
- Know and apply the criteria for creating methodological materials for working with robotic toys and kits
- They will have experience in verifying proposed activities
- They will be able to look at teaching robotics from the perspective of taxonomies
- They will know the risks and benefits of educational robotics and its impact on the development of students' skills

Class syllabus:
• Work with a selected robotic kit
• Didactic analysis of the curriculum in educational robotics
• Taxonomy in the context of robotic toy programming
• Preparation and analysis of methodological materials for robotic kits
• Verification of proposed materials

Recommended literature:
• The teacher's own electronic study materials published on the subject's website, resp. in Moodle
• Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika : Didaktika robotických stavebníc : 1.2 Vzdelávanie nekvalifikovaných učiteľov informatiky na 2. stupni ZŠ a na SŠ / Martina Kabátová, ... [et al.]. Bratislava : Štátny pedagogický ústav, 2010
Premeny školy v digitálnom veku / Ivan Kalaš a kolektív. Bratislava : Slovenské pedagogické nakladateľstvo - Mladé letá, 2013

• Various materials from manufacturers of selected robotic kits such as LEGO, Ozobot, Micro: bit, etc.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 88

A	B	C	D	E	FX
89,77	3,41	1,14	2,27	0,0	3,41

Lecturers: doc. Mgr. Karolína Miková, PhD., Mgr. Jakub Krcho

Last change: 21.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 738

A	B	C	D	E	FX
57,86	16,53	10,98	4,2	1,76	8,67

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 212

A	B	C	D	E	FX
69,34	17,92	8,96	2,36	0,0	1,42

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 141

A	B	C	D	E	FX
71,63	12,77	9,93	2,84	2,84	0,0

Lecturers: RNDr. Martin Sleziak, PhD., prof. RNDr. Pavol Zlatoš, PhD.
Last change: 29.05.2023
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 160

A	B	C	D	E	FX
22,5	18,13	28,75	13,75	8,75	8,13

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

Last change: 04.07.2023

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 168

A	B	C	D	E	FX
50,6	18,45	13,69	10,71	6,55	0,0

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

Last change: 14.03.2022
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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

Last change: 15.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 169					
A	B	C	D	E	FX
65,68	28,4	5,33	0,59	0,0	0,0
Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., prof. RNDr. Pavol Zlatoš, PhD.					
Last change: 24.06.2022					
Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.					

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.					

COURSE DESCRIPTION

Academic year: 2025/2026

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: 113

A	ABS	B	C	D	E	FX	NEABS
32,74	23,89	8,85	6,19	0,88	0,0	24,78	2,65

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 86

A	ABS	B	C	D	E	FX	NEABS
62,79	18,6	1,16	1,16	0,0	0,0	9,3	6,98

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-UIN-673/22	Software in Education

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: I., II., N

Prerequisites:

Course requirements:
Continuous assessment: The student can get 40% points for a review of software for teaching computer science. He will get another 60% of points for the design, specification and implementation of his own educational software.
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student is able to assess the suitability of specific educational software for teaching computer science at elementary schools, high schools, respectively. VŠ. He is able to classify educational software. Can give examples of software that is suitable for education for a specific age group of students. Review educational software. Can apply the findings to the design of educational software. Creates a software proposal for teaching computer science for elementary or high school students.

Class syllabus:
The importance of digital technologies in the cognitive process, in teaching and learning.
Definition and classification of software used in education.
Criteria for evaluating educational software from different perspectives.
Educational applications for teaching computer science to primary and secondary school students.
Information systems used for education.
Software for education and developmental stages of knowledge.
GUI design for software to be used in education.
Action research - students and teachers as co-authors of software design for education.
Principles of creating software for education.
Educational software for students with special needs.

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: 6

A	B	C	D	E	FX
66,67	16,67	16,67	0,0	0,0	0,0

Lecturers: doc. PaedDr. Monika Tomcsányiová, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 160

A	B	C	D	E	FX
98,75	0,0	0,0	0,0	0,0	1,25

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 26

A	B	C	D	E	FX
73,08	0,0	3,85	7,69	11,54	3,85

Lecturers: doc. Mgr. Karolína Miková, PhD., doc. PaedDr. Klára Velmovská, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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.

Last change: 22.08.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 42

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.

Last change: 22.08.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 54

A	ABS	B	C	D	E	FX
96,3	0,0	3,7	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.

Last change: 22.08.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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.

Last change: 22.08.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-101/22	Theoretical Computer Science (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., 5.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: yes, homework (25%)/ tests (25%)
Exam: written
Indicative evaluation scale: A 90%, B 80%, C 70%, D 60%, E% 50%)

Learning outcomes:
To introduce the issue of theoretical informatics, to acquaint students with classical and current areas of research, in which there are basic questions: Can all problems be solved algorithmically? How effective is the solution? What are the solution techniques? After completing the course, students will know what a computational model is. On the computational model, the finite state machine (KA) will know what the calculation step is, the calculation, the accepting calculation. They will be able to show (prove) that a specific problem (language recognition) is solvable or. unsolvable at KA. Students will understand the definition of nondeterminism and its use in solving simple problems. Students will be able to write simple programs for the Turing machine.

Class syllabus:
Brief introduction to the main concepts of theoretical computer science:
• Alphabets, Words, Languages and Algorithmic Problems
• computational model Finite automaton (KA),
• Configuration, calculation step, calculation, accepting and non-accepting calculation.
• Method of KA design: ad hoc and the need for proof of correctness resp. modular design
• Existence of problems that are unsolvable at KA. Evidence of non-existence
• Nondeterministic finite state machine (NKA), Configuration, calculation step, calculation, accepting and non-accepting calculation.
• Equivalence of KA and NKA (subsoil construction)
• Introduction to the computational model of the Turing machine

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 41

A	B	C	D	E	FX
80,49	12,2	4,88	2,44	0,0	0,0

Lecturers: RNDr. Michal Winczer, PhD., Mgr. Lucia Budinská, PhD., doc. RNDr. Zuzana Kubincová, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-102/22	Theoretical Computer Science (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: FMFI.KI/1-INF-215/14 - Formal Languages and Automata (1) or FMFI.KAI +KDMFI/1-AIN-211/10 - Introduction to Theoretical Informatics or FMFI.KDMFI/2-UIN-101/22 - Theoretical Computer Science (1) or FMFI.KDMFI/2-UIN-101/15 - Theoretical Computer Science (1)

Course requirements:
Continuous assessment: homework (25%)/ tests (25%)
Exam: written
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E% 50%

Learning outcomes:
Students will deepen and expand their knowledge in the field of theoretical informatics, they will get acquainted with other current areas of research, they will further explore the basic questions of theoretical informatics: How effective is the solution? What are the solution techniques? Students will know the computational model of TS, they will be able to simulate several modifications of TS (multiband, nondeterministic). They will know that there are problems that cannot be solved on TS. They will be able to use the reduction between problems to prove both solvability and unsolvability.

Class syllabus:
• Turing machines
• Computability
• Complexity theory
• Ways to solve difficult problems
• Cryptography

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 26

A	B	C	D	E	FX
92,31	3,85	0,0	3,85	0,0	0,0

Lecturers: RNDr. Michal Winczer, PhD., Mgr. Lucia Budinská, PhD., doc. RNDr. Zuzana Kubincová, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026

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: 163

A	B	C	D	E	FX
39,26	28,22	15,34	8,59	1,84	6,75

Lecturers: doc. Mgr. Karolína Miková, PhD., Mgr. Lucia Budinská, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2025/2026	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KDMFI+KAI/2-UIN-247/15	**Course title:** Web Technologies in Teaching
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: 5.	
Educational level: II.	
Prerequisites:	
Course requirements: Continuous assessment: active participation in class (15%), homework (25%), papers (25%), project (35%) Indicative grading scale: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 100/0	
Learning outcomes: Students will be familiar with different tools based on the latest web technologies, will be able to decide which of these tools are suitable for which learning activities and will be able to suggest different ways of using them in school practice.	
Class syllabus: - new interactive web tools - overview, technological and pedagogical background, relation to learning theories - blog, vlog, microblog - collaborative editors and other tools, wikis - podcasting, social bookmarking and tagging - social networks - tools for evaluating activities on the interactive web, peer-review, peer-assessment, self-assessment	
Recommended literature: • The teacher's own electronic study materials published on the course website or in the Moodle system • Selection of recent publications in the field	
Languages necessary to complete the course: SLovak, English	
Notes:	

Past grade distribution
Total number of evaluated students: 10

A	B	C	D	E	FX
90,0	0,0	10,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Zuzana Kubincová, PhD.

Last change: 22.06.2022

Approved by: doc. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Mária Slavíčková, PhD.