Course descriptions

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COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-357/22	Algorithms and Data Structures (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:
Continuous assessment: assessment of short tests (50%) and several smaller projects (50%)
Indicative grading scale: A 88%, B 81%, C 74%, D 67%, E 60%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completion of the course, students will be familiar with more advanced data structures and algorithms, understand how they can be used in problem solving, be able to estimate the complexity of operations on individual structures, and compare programs solving the same complex problem in terms of efficiency.

Class syllabus:
- Advanced balanced trees (B-tree, Red-Black tree, Splay tree)
- Lexicographic tree, Skip list
- Heap
- Advanced Hashing
- Other sorting algorithms
- Heuristic algorithms, probabilistic algorithms

Recommended literature:
• the teacher's own electronic study materials published on the course website or in the Moodle system
• Lee, K.D., Hubbard, S.: Data Structures and Algorithms with Python, Springer, 2015
• Ryant, I.: Algoritmy a datové struktury objektově, 2017, S. 288
• Wróblewski, P.: Algoritmy: Datové struktury a programovací techniky, Computer Press, 2004, S. 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: 0

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

Lecturers: prof. RNDr. Zuzana Kubincová, PhD.

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 6

Recommended semester:

Educational level: I.II., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 22

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

Lecturers: prof. Ing. Igor Farkaš, Dr.

Last change:

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 1.

Educational level: II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 19

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

Lecturers: doc. RNDr. Peter Demkanin, PhD.

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 2.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 108

A	B	C	D	E	FX
83,33	2,78	4,63	0,93	6,48	1,85

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

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-151/22	Creation, Analysis and Use of Algorithmic Tasks

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 work in seminars (20%), homework (40%), projects (40%)
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 use basic algorithms to solve presented tasks, e.g. shortest path problem, pattern matching.
Students can create complex tasks using theoretical knowledge in conjuction with programming.
Students gain experience in creation of tasks which can be used in developing or rehersing or testing their competences.
Students can use algorithmic tasks from common Slovak programming competitions and their solutions as methodical materials.
Students can analyse solutions of pupils/students and give them constructive feedback.

Class syllabus:
Stručná osnova predmetu:
• recursion
• finding paths in graphs
• pattern matching
• computational geometry
• library algorithms of programming languages
• lesson plan creation based on programming competition task
• connecting computer science themes with algoritmic thinking and programming
• creation of tasks connected with real world (e. g. public transport lines)
• creation of tasks used in final exams
• solving of tasks from Olympiad in informatics

Recommended literature:
• Task archive on prask.ksp.sk
• The teacher's own electronic study materials published on the subject's website, resp. in Moodle

• Michal Forišek a Monika Steinová, Explaining Algorithms Using Metaphors, Springer, 2013
• Zbierka riešených úloh Korešpodenčného seminára z programovania (1998-2006), kolektív organizátorov KSP, FMFI UK, 2011

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 3

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

Lecturers: prof. RNDr. Zuzana Kubincová, PhD., Mgr. Michal Anderle, PhD.

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2.

Educational level: II.

Prerequisites:

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

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

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

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

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

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 0

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

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

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 3.

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: 76

A	B	C	D	E	FX
42,11	19,74	19,74	9,21	6,58	2,63

Lecturers: prof. RNDr. Zuzana Kubincová, PhD.

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 2.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 4.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 2.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 3.

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: 118

A	B	C	D	E	FX
88,14	6,78	4,24	0,0	0,0	0,85

Lecturers: prof. RNDr. Ivan Kalaš, PhD.

Last change: 23.06.2022

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

STATE EXAM DESCRIPTION

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

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

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

Languages necessary to complete the course:
slovak, english

Last change: 17.03.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 4

Recommended semester: 1.

Educational level: II., N

Prerequisites:

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

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

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

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

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

Languages necessary to complete the course:
slovak, englihs

Notes:

Past grade distribution
Total number of evaluated students: 229

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

Lecturers: doc. PaedDr. Mária Slavíčková, PhD.

Last change: 15.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 4

Recommended semester: 2.

Educational level: II., N

Prerequisites:

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

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

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

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

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

Languages necessary to complete the course:
slovak, enghlish

Notes:

Past grade distribution
Total number of evaluated students: 194

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

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

Last change: 17.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 4

Recommended semester: 3.

Educational level: II., N

Prerequisites:

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

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

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

Recommended literature:

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 193

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

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

Last change: 15.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 4

Recommended semester: 4.

Educational level: II.

Prerequisites:

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

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

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

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

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

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 52

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

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

Last change: 17.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 119

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

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

Last change: 15.03.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 4.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 1.

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: 76

A	B	C	D	E	FX
68,42	23,68	6,58	1,32	0,0	0,0

Lecturers: PaedDr. Mgr. Natália Kováčová, PhD.

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 2.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

STATE EXAM DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG+KDMFI/2-UXX-991/22	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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-939/22	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: 3.

Educational level: II.

Prerequisites:

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

Learning outcomes:
Definition of the thesis topic, overview of the current state of problem solving, choice of the theoretical-methodological concept of the thesis and the ability to work selectively and correctly with secondary literature.

Class syllabus:
Choice of thesis topic.
Review of literature on the topic.
Basic material research and the procedure of its processing.
Methods of processing and producing the thesis (citation standards, manuscript editing, note-taking apparatus).
Presentation of a partial output (e.g. in the form of one chapter of the thesis).

Recommended literature:
Selection of literature according to the chosen topic of the thesis;
The current directive of the Rector of Comenius University on the basic requirements of theses;
KATUŠČÁK, D.: Ako písať záverečné a kvalifikačné práce. Nitra: Enigma 2007.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 64

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

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

Last change: 22.08.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 54

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

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

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 4

Recommended semester: 4.

Educational level: II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 36

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

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I.II., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
Slovak or English

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

Past grade distribution
Total number of evaluated students: 95

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

Lecturers: doc. RNDr. Mária Markošová, PhD., prof. Ing. Igor Farkaš, Dr., doc. RNDr. Martin Takáč, PhD.
Last change: 22.08.2021
Approved by: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I.II., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
Slovak or English

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

Past grade distribution
Total number of evaluated students: 95

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

Lecturers: doc. RNDr. Mária Markošová, PhD.

Last change: 22.08.2021
Approved by: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

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

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 318

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

Lecturers: Mgr. Aneta Barnes

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

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

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 201

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

Lecturers: Mgr. Aneta Barnes

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 1.

Educational level: II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
slovak

Notes:

Past grade distribution
Total number of evaluated students: 59

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

Lecturers: RNDr. Monika Dillingerová, PhD.

Last change: 17.03.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 1., 7.

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

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 499

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

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2., 8.

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

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 307

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

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3., 9.

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

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 128

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

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 4., 10.

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

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 79

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

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 1., 7.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 874

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

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

Last change: 05.09.2025

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2., 8.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 542

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

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

Last change: 05.09.2025

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3., 9.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 191

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

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

Last change: 05.09.2025

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 4., 10.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 104

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

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

Last change: 05.09.2025

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-108/00	History of 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: 2.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: active participation in class, presentation
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will know the basic milestones in the history of storing, transmitting and processing information from antiquity to the present day, as well as a brief history of computer science.

Class syllabus:
• History of storage, transmission and processing of information (various storage media: stone, clay, papyrus, parchment, paper, magnetic record;
• information transmission: messenger, sound and light signals, wire telegraph I wireless, radio, television, internet;
• information processing: fonts, positional systems, analog aids, the first calculators, the idea of a universal computer, digital machines, the first electromechanical and electronic computers, a brief look at the development of computer technology after the Second World War).
• History of informatics: algorithm, development in mathematics that influenced informatics: algebra, variables, mathematics mathematics, development of analysis, logic, decidability, computability, efficiency.
• Brief overview of the history of computer technology and informatics in Slovakia (within Czechoslovakia)

Recommended literature:
- Teacher's own electronic study materials published on the course website or in the Moodle system
- Gruska, Havel, Zelený, Wiedermann. Počítačová revolúcia, Sofsem 1984

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 94

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

Lecturers: RNDr. Michal Winczer, PhD., prof. RNDr. Ivan Kalaš, PhD.

Last change: 17.06.2022

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

STATE EXAM DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KDMFI/2-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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.	

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 3.

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: 29

A	B	C	D	E	FX
82,76	10,34	3,45	0,0	3,45	0,0

Lecturers: doc. RNDr. Ľudmila Jašková, PhD.

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

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

Number of credits: 3

Recommended semester: 1., 7.

Educational level: I.II., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 0

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

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

Last change: 13.03.2026

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 5

Recommended semester: 1., 7.

Educational level: I.II., II.

Prerequisites:

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

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

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

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

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

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 10

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

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

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UIN-356/22	Introduction to Artificial Intelligence

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: Active participation in lessons + participation in discussions (50%), design of methodology for one topic in the field of artificial intelligence (suitable for secondary education students) and its presentation (50%).
Test: -
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 are able to prepare and implement attractive and age-appropriate educational activities in the field of artificial intelligence with secondary students. They will be able to discuss with students various aspects of the use of artificial intelligence in devices they know from everyday life.

Class syllabus:
• Artificial intelligence as a topic in the curriculum
• Classification by decision trees
• Machine learning or pattern recognition using neural networks
• Computer as a smart player in computer games
• Search for patterns in large amounts of data
• Turing test or how do we know if we are talking to a machine

Recommended literature:
• Electronic study materials published on the subject's website or moodle system
• Collection of innovative methodologies for RS (artificial intelligence section), IT Academy, 2020 (in Slovak)
• Lindner, A. et al.: Unplugged Activities in the Context of AI, In: ISSEP 2019
• Spano, M. Artificial Intelligence in a Nut Shell, Živé.sk, 2019 (in Slovak)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

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

Lecturers: doc. RNDr. Ľubomír Salanci, PhD., doc. RNDr. Ľudmila Jašková, PhD., Mgr. Mária Čujdíková, PhD.

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
slovak, english

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

Past grade distribution
Total number of evaluated students: 19

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

Lecturers: doc. PaedDr. Mária Slavíčková, PhD.

Last change: 17.03.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 4

Recommended semester: 1.

Educational level: II.

Prerequisites:

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

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

Class syllabus:

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

Recommended literature:

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

Languages necessary to complete the course:

Slovak

Notes:

Past grade distribution

Total number of evaluated students: 203

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

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

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 1.

Educational level: II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 198

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

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

Last change: 17.03.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2.

Educational level: II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 114

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

Lecturers: Mgr. Emília Miťková, PhD., doc. PaedDr. Peter Vankúš, PhD.
Last change: 17.03.2022
Approved by: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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., prof. RNDr. Zuzana Kubincová, PhD.

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 3.

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: 16

A	B	C	D	E	FX
56,25	25,0	6,25	0,0	0,0	12,5

Lecturers: doc. PaedDr. Monika Tomcsányiová, PhD.

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 1., 7.

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

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 202

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

Lecturers: Mgr. Xenia Daniela Poslon, PhD.

Last change: 06.09.2023

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2., 8.

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

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 202

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

Lecturers: Mgr. Xenia Daniela Poslon, PhD.

Last change: 06.09.2023

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2.

Educational level: II.

Prerequisites:

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

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

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

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

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

Recommended literature:

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

Languages necessary to complete the course:
Slovak, Czech

Notes:

Past grade distribution
Total number of evaluated students: 96

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

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

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

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

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

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

Recommended literature:

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

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 58

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

Lecturers: Mgr. Štefan Zolcer, PhD.

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I.II., II.

Prerequisites:

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

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 2007

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

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

Last change: 15.03.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I.II., II.

Prerequisites:

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

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1797

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

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

Last change: 15.03.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3., 9.

Educational level: I.II., II.

Prerequisites:

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

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1525

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

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

Last change: 15.03.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 4., 10.

Educational level: I.II., II.

Prerequisites:

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

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1267

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

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

Last change: 15.03.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

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

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

Learning outcomes:

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

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

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 32

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

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

Last change: 14.03.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 4.

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., Mgr. Lucia Budinská, PhD.

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 1.

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: 24

A	B	C	D	E	FX
37,5	12,5	8,33	16,67	20,83	4,17

Lecturers: PaedDr. Roman Hrušecký, PhD.

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 93

A	B	C	D	E	FX
90,32	3,23	1,08	2,15	0,0	3,23

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

Last change: 21.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 1., 7.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 746

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

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2., 8.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 435

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

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3., 9.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 215

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

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 4., 10.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 153

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

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 4.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

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

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

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

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

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 165

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

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 3

Recommended semester: 2.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

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

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

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

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

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

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 169

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

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

Last change: 04.07.2023

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 3

Recommended semester: 2.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 184

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

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

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 3

Recommended semester: 2.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2.

Educational level: II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 128

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

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

Last change: 15.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3.

Educational level: II., N

Prerequisites:

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

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

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

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

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 194

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

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

Last change: 24.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 4.

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: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 1., 7.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 155

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

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2., 8.

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

Prerequisites:

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

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

Class syllabus:
The sylabus is targeted at the comprehension of the basics of the Slovak language for the absolute beginners (A1) and this course is a follow up course to the Slovak language course 1.

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 87

A	ABS	B	C	D	E	FX	NEABS
63,22	18,39	1,15	1,15	0,0	0,0	9,2	6,9

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-271/20	Slovak Language for Foreign Students (3)

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

Number of credits: 2

Recommended semester: 3., 9.

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

Prerequisites:

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

Learning outcomes:
This course is aimed for foreign students to better comprehend all the language skills important to enable correct usage of the Slovak language – listening comprehension, reading, writing and speaking.

Class syllabus:
The sylabus is targeted at the comprehension of all the language skills of the Slovak language , and it is a follow up course to the Slovak language course 2.

Recommended literature:
Krížom-Krážom Slovenčina 2, additional material to further support the covered topics.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 32

A	ABS	B	C	D	E	FX	NEABS
59,38	3,13	18,75	3,13	3,13	0,0	12,5	0,0

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-272/20	Slovak Language for Foreign Students (4)

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

Number of credits: 2

Recommended semester: 4., 10.

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

Prerequisites:

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

Learning outcomes:
This course is aimed for foreign students to better comprehend all the language skills important to enable correct usage of the Slovak language – listening comprehension, reading, writing and speaking.

Class syllabus:
The sylabus is targeted at the comprehension of all the language skills of the Slovak language , and it is a follow up course to the Slovak language course 3.

Recommended literature:
Krížom-Krážom Slovenčina 2, additional material to further support the covered topics.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 25

A	ABS	B	C	D	E	FX	NEABS
84,0	0,0	4,0	4,0	0,0	0,0	8,0	0,0

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-115/17	Sports in Natur (1)

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

Number of credits: 2

Recommended semester: 1., 7.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%
The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.

Learning outcomes:
Acquisition and development of basic motor skills and abilities in selected sports: skiing and snowboarding. Mastering the correct technique of performing individual movements, which are necessary for skiing and snowboarding.

Class syllabus:
The student can sign up for the outdoor sports courses offered by the department: skiing, snowboarding. The lessons in the courses are focused on the development of basic and special movement skills and mastering the techniques needed for the sports.

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ does not rent ski equipment.

Past grade distribution
Total number of evaluated students: 186

A	B	C	D	E	FX
98,92	0,0	0,0	0,0	0,0	1,08

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký

Last change: 16.06.2022
Approved by: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/2-MXX-116/18	Sports in Natur (2)

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

Number of credits: 2

Recommended semester: 2., 8.

Educational level: I.II., II.

Prerequisites:

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%.
The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.

Learning outcomes:
Creating a positive and lasting relationship with physical activity. Acquisition and mastery of basic motor skills and abilities in outdoor sports: windsurfing, beach volleyball, water tourism - river rafting, hiking and other sports according to interest. Training and improving the technique needed for the sports.

Class syllabus:
The student can sign up for the outdoor sports courses offered by the department: water tourism - river rafting, windsurfing, beach volleyball, hiking and other hobby sports. The lessons in the courses are focused on the development of basic and special movement skills and, mastering the techniques needed for the sports.

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ will provide sports equipment.

Past grade distribution
Total number of evaluated students: 109

A	B	C	D	E	FX
95,41	0,0	0,0	0,0	0,0	4,59

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký
Last change: 16.06.2022
Approved by: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-204/22	Starting Teacher at School

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

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: active participation in seminars + preparation for classes (80%), project / report (20%)
A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100 / 0

Learning outcomes:
The student:
- gets a concrete idea of the teacher's responsibilities
- will be acquainted with the recommended procedures and effective ways of solving various situations in pedagogical practice
- propose activities and be able to assess their suitability for application to different problems with different groups of students
- can plan their own personal development in addition to professional development and take a critical approach to self-reflection

Class syllabus:
- first year of the teacher (holidays, payslips, attendance, introductory teacher, training, ...)
- work of subject commissions and pedagogical documentation
- class
- coordination of school activities and events
- communication with parents
- crisis situations at school
- professional development and mental health care
- toxic stress and inappropriate behavior
- bullying at school, mobing and bossing
- working with students with special educational needs

Recommended literature:
own electronic texts published on the website, resp. in the Moodle environment
GINNIS, P .: Effective Teaching Tools for Teachers. Universum Publishing House, 2019.

GORDON, T .: School without Losers. Malvern. 2015.
BREAUX, A .: Quick help for teachers. Portal. 2020.
SMETÁČKOVÁ, I., ŠTECH, S .: Učitelské vyhoření. Portal. 2020.
ČAPEK, R .: Lazy Teacher. How to teach well and effectively. Raabe. 2019
BUCHWALD, P .: Stress at school and how to manage it. Edika. 2013.
JANÍK, T .: Myths of False Error. About chibas in education and pedagogy. Masaryk University. 2020.
ČOKYNA, J .: And where are your edges? N Press. 2019

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 10

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

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

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-120/23	Students' Research Exhibition (1)

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

Number of credits: 2

Recommended semester: 2.

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: 1

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: 15.01.2024

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UMA-220/23	Students' Research Exhibition (2)

Educational activities:
Type of activities: training session
Number of hours:
per week: **per level/semester:** 3d
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: 4

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: 15.01.2024

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-UXX-203/22	Teacher Communication Skills

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

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:
Continuous assessment: active work in class (interactive presentation and practical solution of tasks - 50% of continuous assessment), submission and presentation of assignments (preparation for class and completion of lessons - 50% of continuous assessment).
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100 / 0

Learning outcomes:
The student will be at the end of the semester:
- know specific activities focused on psychosocial interaction
- have experienced and practiced application of selected communication skills
- familiar with the rules and implications of best practices for effective communication
- know the rules and structure of arguments
- be able to appropriately apply the knowledge of solo taxonomy in evaluating the quality of verbal statements of the student

Class syllabus:
- Key competencies of the teacher, influential theories about concepts in communication
- Verbal and nonverbal communication in the classroom
- Evaluation of verbal outcomes - SOLO taxonomy
- Argumentation as a part of critical thinking, conceptual comics
- Teacher questions
- Feedback
- Pupils' participation in learning communication
- Dialogue teaching
- Use of psychosocial interaction training in school practice
- Silent video as a means of developing communication skills

Recommended literature:
šeďová, K. et al .: Výukova komunikace, Masarykova Univerzita, Brno 2019.

Svoboda, M .: Psychosocial interaction training in pedagogical practice, University of West Bohemia in Pilsen, 2017.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 32

A	B	C	D	E	FX
62,5	9,38	6,25	9,38	9,38	3,13

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

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-851/22	Teaching Practice A (2)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 10d
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 47

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

Lecturers: PaedDr. Peter Horváth, PhD., RNDr. Michal Winczer, PhD., Mgr. Michaela Vargová, PhD., RNDr. Jana Chalmovianská, PhD., PaedDr. Mgr. Natália Kováčová, PhD.

Last change: 22.08.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-853/22	Teaching Practice A (3)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 15d
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 62

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

Lecturers: RNDr. Michal Winczer, PhD., Mgr. Michaela Vargová, PhD., PaedDr. Peter Horváth, PhD., RNDr. Jana Chalmovianská, PhD., PaedDr. Mgr. Natália Kováčová, PhD.

Last change: 22.08.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-854/22	Teaching Practice A (3)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 15d
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 72

A	ABS	B	C	D	E	FX
97,22	0,0	2,78	0,0	0,0	0,0	0,0

Lecturers: RNDr. Michal Winczer, PhD., PaedDr. Peter Horváth, PhD., Mgr. Michaela Vargová, PhD., RNDr. Jana Chalmovianská, PhD., M. A. Linda Steyne, PhD., PaedDr. Mgr. Natália Kováčová, PhD., doc. PaedDr. Janka Peráčková, PhD.

Last change: 22.08.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAG/2-UXX-852/22	Teaching Practice B (2)

Educational activities:
Type of activities: practice
Number of hours:
per week: **per level/semester:** 10d
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 60

A	ABS	B	C	D	E	FX
98,33	0,0	0,0	1,67	0,0	0,0	0,0

Lecturers: RNDr. Michal Winczer, PhD., PaedDr. Peter Horváth, PhD., Mgr. Michaela Vargová, PhD., RNDr. Jana Chalmovianská, PhD., M. A. Linda Steyne, PhD., PaedDr. Mgr. Natália Kováčová, PhD.

Last change: 22.08.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 1.

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: 49

A	B	C	D	E	FX
81,63	12,24	4,08	2,04	0,0	0,0

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

Last change: 22.06.2022

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

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/2-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: 2.

Educational level: II.

Prerequisites: FMFI.KI/1-INF-215/14 - Formal Languages and Automata (1) or FMFI.KAI +KDMFI/1-AIN-211/22 - Introduction to Theoretical Informatics or FMFI.KDMFI/2-UIN-101/22 - 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., prof. RNDr. Zuzana Kubincová, PhD.
Last change: 22.06.2022
Approved by: prof. RNDr. Zuzana Kubincová, PhD., doc. PaedDr. Monika Tomcsányiová, PhD., doc. PaedDr. Mária Slavíčková, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI+KAI/2-UIN-247/15	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: 3.

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: prof. RNDr. Zuzana Kubincová, PhD.

Last change: 22.06.2022

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