Course descriptions

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STATE EXAM DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KMANM/1-MMN-991/22	**Course title:** BSc Thesis Defense
Number of credits: 8	
Educational level: I.	
State exam syllabus:	
Last change: 21.01.2022	
Approved by: doc. RNDr. Michal Demetrian, PhD.	

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-911/25	Bachelor Thesis Seminar

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

Number of credits: 2

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements:
Active participation in the subject.
Grades: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student will get acquainted with the rules of writing the final thesis.

Class syllabus:
Academic ethics. Correct citation and its meaning. The purpose of the bachelor thesis. Independence and work with literature. Text design.

Recommended literature:

Languages necessary to complete the course:
Slovak, English.

Notes:

Past grade distribution
Total number of evaluated students: 536

A	B	C	D	E	FX
87,31	8,96	2,43	0,37	0,93	0,0

Lecturers: doc. RNDr. Michal Demetrian, PhD., doc. PhDr. Daniela Majerčáková, PhD., MBA

Last change: 20.05.2025

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-710/25	Banking and Insurance Law

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: I.

Prerequisites:

Antirequisites: FMFI.KAMŠ/1-PMA-710/15

Course requirements:
During the semester the student can get 100% points for one written test, which is usually written sometime during the last two weeks of the semester.
Grade thresholds: A: at least 90.00%; B: 89.99% – 80.00%; C: 79.99% – 70.00%; D: 69.99% – 60.00%; E: 59.99% – 50.00%; Fx: 49.99% – 0.00%.
Scale of assessment (preliminary/final): Practical work during semester 100% / final exam 0%.

Learning outcomes:
After completing the course, the student will master the history and basic concepts of banking and insurance, as well as some parts of the law governing commercial banking and insurance business in Slovakia.

Class syllabus:
Basic terms used in the banking and insurance sector. Origin and development of banking and insurance in the world. Commercial banking and insurance market in Slovakia. Acts (in their current and complete wording) regulating the commercial insurance industry in Slovakia: Act on Insurance, Act on Compulsory Contractual Motor Vehicle Third Party Liability Insurance and other laws. Social and pension security in Slovakia. Legal regulations regulating the commercial banking sector in Slovakia in their current and complete wording. Solvency and financial stability of commercial banks and insurance companies in Slovakia and the European Union, the Basel III and Solvency II regulatory frameworks. International Financial Reporting Standards (IFRS) for commercial banks and insurance companies.

Recommended literature:
Poisťovníctvo a účtovníctvo poisťovní / Jitka Meluchová. Bratislava : Iura Edition, 2004;
Riziko ve financích a pojišťovnictví: Basel III a Solvency II / Tomáš Cipra. Praha : Ekopress, 2015;
Collection of Laws of the Slovak Republic;
EUR-Lex: EU law, the official online database of European Union law;
study materials of the lecturer.

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: Mgr. Gábor Szűcs, PhD.

Last change: 12.12.2025

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-510/00	Biomathematics (1)

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: 3

Recommended semester: 5.

Educational level: I., I.II.

Prerequisites: FMFI.KMANM/1-MAT-250/22 - Mathematical Analysis (4) or FMFI.KMANM/1-MMN-250/22 - Mathematical Analysis (4) or FMFI.KMANM/1-BMF-261/22 - Basics of Mathematics (4) or FMFI.KMANM/1-BMF-226/15 - Basics of Mathematics (3)

Course requirements:
Scale of assessment (preliminary/final): 40/60

Learning outcomes:

Class syllabus:
Selection dynamics and population genetics: Hardy-Weinberger law for two and more alleles, the selection equation, the mutation selection equation, the selection recombination equation.
Models of population ecology: logistic equation, Lotka-Volterra equations for predator-prey systems with and without intraspecific competition.

Recommended literature:
J. Hofbauer, K. Sigmund: The Theory of Evolution and Dynamical systems, Cambridge University Press, Cambridge 1988.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 167

A	B	C	D	E	FX
53,89	17,37	16,17	6,59	3,59	2,4

Lecturers: prof. RNDr. Jaroslav Jaroš, CSc.

Last change: 02.06.2015

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-515/00	Biomathematics (2)

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: 3

Recommended semester: 6.

Educational level: I., I.II.

Prerequisites: FMFI.KMANM/1-MAT-510/00 - Biomathematics (1)

Course requirements:

Learning outcomes:

Class syllabus:
Models of population ecology: the equilibria and their stability, Lotka-Volterra equations for more than two populations.
Game dynamics: evolutionary stable strategies, evolution of phenotypes, equations for asymmetric games.

Recommended literature:
J. Hofbauer, K. Sigmund: The Theory of Evolution and Dynamical systems, Cambridge University Press, Cambridge 1988.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 67

A	B	C	D	E	FX
44,78	16,42	22,39	13,43	1,49	1,49

Lecturers: prof. RNDr. Jaroslav Jaroš, CSc.

Last change: 02.06.2015

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/1-AIN-407/22	Brain and Mind

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., 3., 5.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Continuous assessment: presence (30%), presentation (40%), bonus assignments (30%)
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The course objectives are to make the students familiar with major theories and methods of mind/ brain research.

Class syllabus:
The subject of the course is the human mind and brain from the perspective of neuroscience, computer science, psychology, and philosophy. It is mainly focused on the interdisciplinary study of consciousness: its neural correlates, neuroscience and behavioral research methods, and major theories.

Recommended literature:
S. Blackmore, E.T. Troscianko: Consciousnes. An Introduction. Routledge, third edition 2018.
M.S. Gazzaniga, R.B. Ivry, G.R. Mangun: Cognitive Neuroscience. The Biology of the Mind. W.W. Norton & company, fifth edition 2019.
J. Friedenberg, G. Silverman: Cognitive Science. An Introduction to the Study of Mind. Sage 2012.
T. Metzinger: The Ego Tunnel. The Science of the Mind and the Myth of the self. Basic Books 2009.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 263					
A	B	C	D	E	FX
49,43	14,83	12,55	11,03	4,18	7,98
Lecturers: RNDr. Barbora Cimrová, PhD., doc. PhDr. Ján Rybár, PhD.					
Last change: 04.07.2022					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-571/24	Climate Change Economics

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

Number of credits: 2

Recommended semester: 6.

Educational level: I.

Prerequisites:

Course requirements:
Evaluation of the course consists of the final exam (60%), homework (30%) and exercises during lectures (10%). In addition, it is necessary to obtain a minimum of 50% from both the interim assessment and the final exam.
Grading scale: A 100-91%, B 90-81%, C 80-71%, D 70-61%, E 60-51%
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
The student will gain an overview of economics of decarbonization technologies and teconomic instruments suitable for addressing externalities.

Class syllabus:
The the course aims to provide a deeper theoretical insight into the issue of economic externalities, such as global warming. The course will introduce several classic economic tools that are used to solve externalities in the field of public finances (Pigou's tax, cap-and-trade programs, subsidies, etc.). The second part of the course will be devoted to the issue of decarbonization technologies, such as heat pumps or electric cars. In the context of solving the problem of global warming, we will evaluate the economic benefit of these technologies and present the current progress in the field.

Recommended literature:
Gruber, J. 2016. Public Finance and Public Policy. Macmillan.
Harris, J. M., and Roach, B. 2018. Environmental and Natural Resource Economics: A Contemporary Approach. ME Sharpe.
Schotter, A. 2009. Microeconomics: A Modern Approach. Cengage Learning.

Languages necessary to complete the course:
English, Slovak

Notes:
The course is a part of the cooperation of the EFM study program with CERGE-EI on their Distance learning program. The course will be conducted in a partially cumulative form: (3P+1C) per week during 6 weeks from the beginning of the semester. The final exam will be held the

week after the end of the course, the make-up exam a week later. Lectures on the subject will take place in electronic form in English, exercises in person.

Past grade distribution
Total number of evaluated students: 6

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

Lecturers: Mgr. Jana Szolgayová, PhD.

Last change: 05.06.2024

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/1-AIN-408/22	Cognitive Laboratory

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., 3., 5.

Educational level: I., I.II.

Prerequisites:

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

Learning outcomes:
Acquisition of methods for studying various cognitive phenomena (data collection and analysis) using an online cognitive laboratory.

Class syllabus:
Demonstration of 40 standard experiments in the fields of neurocognition, mechanisms of perception, attention systems, memory processes, speech production and perception, knowledge representation (concepts and mental ideas), judgment and decision-making processes.

Recommended literature:
CogLab / Greg Francis, Ian Neath, Daniel R. VanHorn. Thomson/Wadsworth, 2014

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 106

A	B	C	D	E	FX
67,92	11,32	8,49	0,94	0,0	11,32

Lecturers: doc. PhDr. Ján Rybár, PhD.

Last change: 17.05.2024

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/2-MMN-106/15	Computer Statistics

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: 6.

Educational level: I.

Prerequisites:

Course requirements:
Preliminary semester evaluation: exams;
Examination: test and oral examination;
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Graduates of the course will be able to use R software for basic statistical analysis. They will gain experience in working with real data and will be able to apply in practice the statistical methods from which they have become acquainted in theory in the past.

Class syllabus:
Basics of working with R - arithmetic, logical operators, cycles, working with graphics. Data import and visualization. Descriptive statistics. Confidence intervals and hypothesis testing (normality, equality of means / medians, correlation coefficients). Linear regression. Chi-square goodness of fit test.

Recommended literature:
Statistics / David Freedman; Robert Pisani; Roger Purves. New York : W.W. Norton & Company, cop, 2007

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 227

A	B	C	D	E	FX
15,42	21,15	22,03	25,11	14,98	1,32

Lecturers: Mgr. Jozef Kováč, PhD.

Last change: 10.03.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-556/15	DEA Models

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: 3

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-EFM-220/00 - Linear Programming or FMFI.KMANM/1-MMN-255/00 - Linear Programming

Course requirements:
Continuous assessment: project 30%, small written exams or homeworks 20% , a necessary condition to obtain at least 10% of the 30% evaluation for the project
Examination: written 50%, possible oral exam (improvement or deterioration of the achieved evaluation by one degree)
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Upon completion of the course students will understand the fundamentals of DEA models and will be able to use them for evaluating the effectiveness of units within a given group.

Class syllabus:
Introduction to DEA modelling, different approaches to DEA modeling, efficiency and effectiveness, CCR model, BCC model, range efficiency, additive model, basic model properties, model invariance, monotonous efficiency, input / output additions, returns to scale, superefektivity, rules for correct application of DEA models, SBM model, AR model.

Recommended literature:
Data envelopment analysis : A comprehensive Text with Models, applications, references and DEA- Solver software / William W. Cooper [et al.]. Boston : Kluwer , 2004
M. Halická: Učebné texty k predmetu DEA modely dostupné na www.iam.fmph.uniba.sk/ institute/halicka/text/TextDEA35.pdf

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 272

A	B	C	D	E	FX
46,32	24,26	15,81	8,46	3,31	1,84

Lecturers: doc. RNDr. Margaréta Halická, CSc.

Last change: 17.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-571/22	Data Analysis in Management

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: 3

Recommended semester: 4., 6.

Educational level: I.

Prerequisites:

Antirequisites: FM.KIS/372B/20

Course requirements:
Active participation, handover (30), exam (70).
Grades: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
Business Data Scientist
● Analyzes data using a variety of tools
● Solves problems using modeling techniques
● Designs, builds and maintains data and analytical infrastructure
● Creates sophisticated analytical models
● Derives comprehensive data outputs to inform the client and facilitate his business decision
● Skills: data extraction, data transformation, data retrieval, dynamic data analysis, machine learning, Big Data, SQL, R, Python and many more.

Class syllabus:
Part one - Working with a real NAY database in SQL
1. What does a real database look like and what does stored real data look like? (Introduction to SQL. Basic structures. Basic commands (Select, Where, Order By, ...). Data types. Keys.)
2. How to extract the necessary data from the database for further analysis? (Join, Inner Join, Union, ...)
3. How to save hours in demanding databases when downloading and analyzing data in SQL? (Efficient code writing in SQL. Window Function.)
4. Summarizing knowledge (Practicing previous tasks Indexing.)
Part Two - Statistics in R
5. How to use R, one of the most commonly used languages by data analysts (Introduction to R. Library. Variables. Fields. Data Frames. Functions. For cycle. If.)

6. How to perform descriptive and exploratory analysis of the data set? (Basic statistical indicators (mean, variance, quantiles). Graphs (histogram, boxplot).) What is the value of the average cart in the NAY? How many products does it contain? Does the NAY have any wholesale buyers?
7. How to verify and test hypotheses in R (part 1)? (Statistical induction. Testing of statistical hypotheses. Parametric tests.) Is the average purchase rate in NAY Electrode the same in the West and East?
8. How to verify and test hypotheses in R (part 2)? (Statistical induction. Testing of statistical hypotheses. Nonparametric tests.)
9. How do I find out the basic relationships and connections between the variables of a data set? (Correlation and association analysis. Covariance. Correlation and correlation coefficients. Chi-square test, association measures) When a customer pays points, does he buy for more money? The more points a customer has on the NAY card, the more expensive products they buy?
10. How do I find out the relationship between two / more independent / dependent variables of a data set? (F-test, t-test and ANOVA - parametric / non-parametric.) Do customer baskets with a loyalty card contain more expensive products than customer baskets without a loyalty card? Do customers with a higher level of NAY card buy more than customers with a lower level?
11. How do I reveal more complex relationships in the data and make a prediction? (Regression models - linear / logistic. Simple and multiple linear / logistic model. Least squares method.) What does the customer's purchase amount at NAY Elektrodom depend on?
12. How do I identify a trend in the data? (Time series analysis. Decomposition of time series into components. Trend determination.)
Part three - Python
13. How to use the acquired knowledge in the increasingly used Python language?
Part four - Lecture with an attractive guest from practice.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 29

A	B	C	D	E	FX
44,83	24,14	6,9	17,24	0,0	6,9

Lecturers: Mgr. Lukáš Polesňák

Last change: 17.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-346/22	Differential equations in Matlab

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: 5.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: active work on lectures 30 points, 2x individual work 20 points each, project 30 points
Final evaluation: 100 - 90 A, 89 - 80 B, 79 - 70 C, 69 - 60 D, 59 - 50 E, less than 50 FX.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student will get an overview of the possibilities of solving Cauchy problems for ODR and the processing of these solutions within the MATLAB environment using the procedures built there.

Class syllabus:
Numerical solution of the Cauchy problem - continuous and discretization methods, one-step and multi-step methods. Methods for solving systems of ordinary differential equations. Implementation of methods in Matlab. Stability of the numerical solution.

Recommended literature:
A. Ralston: A first course in numerical analysis, New York, 1965.
R. L.Burden, J. D. Faires: Numerical Analysis, Cengage Learning, 2010.
G. H. Golub, J. M. Ortega: Scientific Computing and Differential Equations: An Introduction to Numerical Methods, Academic Press, 1992
M. H. Holmes: An Introduction to Numerical Methods in Differential Equations, Springer, 2007

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 72

A	B	C	D	E	FX
6,94	9,72	20,83	29,17	29,17	4,17

Lecturers: Mgr. Jela Babušíková, PhD.
Last change: 21.06.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-120/17	Economics (1)

Educational activities:
Type of activities: lecture
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: I.

Prerequisites:

Course requirements:
Continuous test.
Final test-
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
Students will understand the basics of neoclassical, textbook economics.

Class syllabus:
Market forces - demand, supply.
Costs, cost function.
Basic market models.
Perfect competition.
Monopoly.
Monopolistic competition.
Oligopoly markets.
Pricing.
The role of government in a market economy.

Recommended literature:
Michael Baye: Managerial Economics and Bussines Strategy.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 672

A	B	C	D	E	FX
15,48	19,79	17,56	20,68	13,24	13,24

Lecturers: doc. RNDr. Ján Boďa, CSc.

Last change: 09.03.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-140/17	Economics (2)

Educational activities:
Type of activities: lecture
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: I.

Prerequisites:

Antirequisites: FMFI.KMANM/1-MMN-256/22

Course requirements:
Mid-term test, final test.
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
Understanding the basics of how the country's economy as a whole works. The role of government and central bank.

Class syllabus:
Gross domestic product. Total demand in the economy. IS-LM model. Government fiscal policy. Central bank monetary policy. Labor market. Total supply in the economy. Inflation. AS-AD model. Open economy.

Recommended literature:
Olivier Blanchard: Macroeconomics

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 411

A	B	C	D	E	FX
22,14	26,76	21,41	14,84	9,25	5,6

Lecturers: doc. RNDr. Ján Boďa, CSc.

Last change: 09.03.2022

Approved by: doc. RNDr. Michal Demetrian, 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: 3., 5.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 318

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

Lecturers: Mgr. Aneta Barnes

Last change: 11.04.2024
Approved by: doc. RNDr. Michal Demetrian, 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: 4., 6.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 201

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

Lecturers: Mgr. Aneta Barnes

Last change: 11.04.2024
Approved by: doc. RNDr. Michal Demetrian, 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-131/00	English 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.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 93%, B 85%, C 77%, D 70%, E 65%
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:
The objective of the subject is to provide the students with experience and knowledge of technical English and thus make them ready to use English sources of information for later study and professional career.

Class syllabus:
On entering the first semester, students´ knowledge of English is tested and they are divided into groups according to the results of the placement test. In the groups of pre-intermediate and intermediate students, fundamentals of technical English are taught. Advanced students take classes of technical English for their field of study: English for mathematics, for physics, for computer science, English for management and economic and financial mathemathics.

Recommended literature:
Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Aplikovaná matematika / Alexandra Maďarová, Ľubomíra Kožehubová.- učebnica publikovaná online
Anglický jazyk pre študentov FMFI UK : Matematika: Alexandra Maďarová, Eva Foltánová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Fyzika / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Informatika / Elena Klátiková.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.

Languages necessary to complete the course:

Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 7538

A	B	C	D	E	FX
29,53	22,82	18,16	12,52	7,87	9,1

Lecturers: Mgr. Eva Foltánová, Mgr. Ing. Jana Kočvarová, Mgr. Ľubomíra Kožehubová, Mgr. Alexandra Maďarová, Mgr. Aneta Barnes, Mgr. Simona Dobiašová, PhD., Mgr. Valéria Medárová, PhD., Mgr. Katarína Hromadová, PhD.

Last change: 16.09.2025

Approved by: doc. RNDr. Michal Demetrian, 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-132/00	English 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.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 93%, B 85%, C 77%, D 70%, E 65%
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:
The objective of the subject is to provide the students with experience and knowledge of technical English and thus make them ready to use English sources of information for later study and professional career.

Class syllabus:
This is a continuation of the course English (1) designed for pre-intermediate students. Fundamental vocabulary is presented through selected topics in mathematics, physics and informatics. The lessons also contain revision of elementary grammar. Generally, it is a necessary preliminary to advanced programs.

Recommended literature:
Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1733

A	B	C	D	E	FX
22,1	20,95	23,83	14,77	11,08	7,27

Lecturers: Mgr. Ing. Jana Kočvarová, Mgr. Alexandra Maďarová, Mgr. Ľubomíra Kožehubová, Mgr. Eva Foltánová, Mgr. Aneta Barnes, Mgr. Simona Dobiašová, PhD., Mgr. Valéria Medárová, PhD.
Last change: 20.06.2022
Approved by: doc. RNDr. Michal Demetrian, 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-231/00	English 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.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 93%, B 85%, C 77%, D 70%, E 65%
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:
The objective of the classes is to provide the students with knowledge of technical English in their field of study and experience with technical English sources sufficient to make the able to use technical language for their later study and professional purposes.

Class syllabus:
The subject continues the program of English (2). Students take classes of special English for their field of study: English for mathematics, English for physics, English for computer science, English for management and economic and financial mathemathics.
The subject requires advanced knowledge of general English.

Recommended literature:
Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Aplikovaná matematika / Alexandra Maďarová, Ľubomíra Kožehubová.- učebnica publikovaná online
Anglický jazyk pre študentov FMFI UK : Matematika: Alexandra Maďarová, Eva Foltánová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Fyzika / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Informatika / Elena Klátiková.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1461

A	B	C	D	E	FX
15,47	18,96	22,72	18,21	18,14	6,5

Lecturers: Mgr. Ing. Jana Kočvarová, Mgr. Alexandra Maďarová, Mgr. Ľubomíra Kožehubová, Mgr. Eva Foltánová, Mgr. Aneta Barnes, Mgr. Simona Dobiašová, PhD., Mgr. Valéria Medárová, PhD., Mgr. Katarína Hromadová, PhD.

Last change: 16.09.2025

Approved by: doc. RNDr. Michal Demetrian, 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-232/10	English 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.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Examination: an examination consisting of a written and an oral part.
Grades: A 93%, B 85%, C 77%, D 70%, E 65%
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/skuska-z-predmetu-anglicky-jazyk-4/
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course, students will be able to work independently with professional literature in English

Class syllabus:
Students take classes of special English for their field of study: English for mathematics, English for physics, English for computer science, English for management and economic and financial mathemathics.

Recommended literature:
Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Aplikovaná matematika / Alexandra Maďarová, Ľubomíra Kožehubová.- učebnica publikovaná online
Anglický jazyk pre študentov FMFI UK : Matematika: Alexandra Maďarová, Eva Foltánová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Fyzika / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Informatika / Elena Klátiková.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 4299

A	B	C	D	E	FX
25,17	28,15	21,61	11,82	6,05	7,21

Lecturers: Mgr. Ing. Jana Kočvarová, Mgr. Alexandra Maďarová, Mgr. Ľubomíra Kožehubová, Mgr. Eva Foltánová, Mgr. Aneta Barnes, Mgr. Simona Dobiašová, PhD., Mgr. Valéria Medárová, PhD.

Last change: 16.09.2025

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-570/00	Experimental Economics

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: 6.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: based on the evaluation of written protocols from the performed experiments
Indicative assessment scale: A 100-90%, B 89-80%, C 79-70%, D 69-60%, E 59-50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will be able to verify the principles on which economic theory is built. They can construct an experiment to support / refute new hypotheses in further research.

Class syllabus:
1. Competitive Markets (Supply and Demand. Shifting Supply.)
2. Market Intervention and Public Policy (A Sales Tax. Prohibition. A Minimum Wage.)
3. Imperfect Markets (Externalities. Monopolies and Cartels.)
4. Firms a technology (Entry and Exit. Network Externalities. Measuring Productivity. Comparative Advantage.)
5. Information, Auctions, Bargaining (Adverse Selection. Auctions. Bargaining.)

Recommended literature:
The Handbook of experimental economics / Editors John H. Kagel, Alvin E. Roth. Princeton : Princeton University Press, 1995
Theodore Bergstrom - John H. Miller: Experiments with Economic Principles: Microeconomics, McGraw-Hill, 2000.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 133

A	B	C	D	E	FX
98,5	0,0	1,5	0,0	0,0	0,0

Lecturers: doc. RNDr. Ján Pekár, PhD.

Last change: 15.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-MMN-331/10	Financial Mathematics

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

Number of credits: 5

Recommended semester: 5.

Educational level: I.

Prerequisites:

Recommended prerequisites:
FMFI.KAMŠ/1-EFM-250/00 - Mathematical Analysis (4) or FMFI.KAMŠ/1-DAV-102/20 - Calculus (1)

Course requirements:
Evaluation during the semester: Project (40%), written test (40%), activity during exercises (20%)
Written exam. Voluntary oral examination to improve the final evaluation.
Informative evaluation scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
After completing the course, students will understand the basic principles of interest rate theory and bond investment management. They will also get acquainted with the principles of stock portfolio management. In the last part of the lecture, they will learn to price derivatives of the European and American type using binomial trees and will also get acquainted with Black-Scholes formulas for pricing put and call options.

Class syllabus:
Coupon and zero-coupon bonds, term structure of interest rates, bootstrap method, yield to maturity, forward rates, duration.
Risk aversion, properties of utility functions, utility functions and mean-variance analysis, the problem of Markowitz, Capital Asset Pricing Model (CAMP).
Binomial tree model, risk-neutral probabilities, risk-neutral pricing formula, Black-Scholes formula, pricing of american options.

Recommended literature:
Baxter M., Rennie A.: Financial Calculus
Hull J.: Options, Futures and Other Derivatives
Luenberger D.: Investment Science.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 456

A	B	C	D	E	FX
30,04	23,03	24,56	10,53	10,53	1,32

Lecturers: doc. Mgr. Igor Melicherčík, PhD., Mgr. Radoslav Hurtiš, PhD.

Last change: 20.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-216/14	Financial Planning - Personal and Family Finance

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: 4., 6.

Educational level: I.

Prerequisites:

Course requirements:
Weight of the mid-term / final evaluation: mid-term evaluation 20% / final evaluation 80% (seminar work 40% + oral exam 40%).
Continuous assessment of the student is associated with his participation in classes. The final evaluation consists of elaboration of a seminar work on a topic that the student chooses at the beginning of the semester (and during the lessons he / she continuously acquires the knowledge he / she develops in the work) and an oral exam.
Submission of the work is a necessary condition for obtaining the final evaluation, and the work must be evaluated min. 20% of the total rating.
Grading: A (100-85), B (84-75), C (74-65), D (64-55), E (54-45), Fx (44-0).
Scale of assessment (preliminary/final): 20 / 80

Learning outcomes:
The aim of the course is to acquaint students of applied mathematical disciplines with the functioning of financial institutions, the functioning of financial instruments, the behavior of people to financial products, the principles of asset management. It wants to bring closer the market to which students theoretically prepare during their university studies. It would help them to find a link between lexical knowledge and the market in which it will be applied. Students acquire knowledge in the field of financial literacy at the level necessary for future functioning in the professional and personal field.

Class syllabus:
The semester begins with a simulation program in which students go through model families with a period of 30 years of productive life and make standard financial decisions (that people encounter). They monitor the impact of their actions on financial assets. Subsequently, the semester goes through the topics of social security, investment, pension systems, credit segments. They apply the knowledge at the end of the semester again in simulations, where to see the differences in the final result based on the acquired knowledge.

Recommended literature:

teaching is based on the practice and professional experience of lecturers

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 97

A	B	C	D	E	FX
65,98	20,62	6,19	1,03	3,09	3,09

Lecturers: Mgr. Andrea Kasanická Straková

Last change: 21.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 499

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

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 307

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

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 128

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

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 79

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

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-MMN-375/00	Game Theory

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: 6.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-282/00 - Probability and Statistics (2) and FMFI.KAG/1-MMN-160/22 - Linear Algebra and Geometry (2)

Course requirements:
Continuous assessment: homework, experiment, continuous and final written test
Approximate rating scale: A 100-90%, B 89-80%, C 79-70%, D 69-60%, E 59-50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student will be able to correctly analyse strategic situations while being able to make the right decisions.

Class syllabus:
Static games with full information. Dominance. Nash equilibrium. Illustration of Nash Equilibrium (Cournot's and Bretrand's Oligopoly Model, Electoral Games, Eradication War, Auctions). Nash equilibrium in mixed actions. Extensive games with perfect information. Associated game, Nash's equilibrium. Extensive games with imperfect information.

Recommended literature:
A Course in Game Theory / Martin J. Osborne, Ariel Rubinstein. Cambridge, Mass. : MIT Press, 1994
Game Theory: An Introduction, Steven Tadelis. Princeton University Press 2013

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 340

A	B	C	D	E	FX
12,94	26,47	30,0	13,82	14,41	2,35

Lecturers: doc. RNDr. Ján Pekár, PhD.

Last change: 15.06.2022
Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 874

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

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

Last change: 05.09.2025

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 542

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

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

Last change: 05.09.2025

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 191

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

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

Last change: 05.09.2025

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 104

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

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

Last change: 05.09.2025

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/1-MXX-491/22	Inclusive Approaches to Education of Students with Special Educational Needs

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

Number of credits: 2

Recommended semester: 1., 3.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Continuous assessment: active participation in class (elaboration of assigned tasks, participation in discussions)
An exam: -
Indicative assessment level: e.g. A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student:
- They will get acquainted with the basic characteristics of types of health disadvantage (HR) and will know the consequences of HR on education.
- Gain personal experience from meetings with people with disabilities and will be able to explain and apply the rules of communication with them.
- Can characterize the forms of education of students with SEN and assess the possibilities of their pedagogical, technical and human support, which positively affect the success of education.

Class syllabus:
- Characteristics of basic concepts.
- Disability models.
- Disability legislation.
- Human, communication, information and architectural barriers.
- Impact of disability on education.
- Segregation - integration - inclusion.
- Information access technologies for people with disabilities.
- Possibilities and limits of creating equal conditions for the education of pupils with specific educational needs.
- Inclusive school - education for all.
- The importance of education for the social inclusion of people with disabilities.

Recommended literature:

- Lechta, V. (ed): Inkluzivní pedagogika. Praha: Portál, 2016, ISBN 978-80-262-1123-5
- Slowík, J.: Komunikace s lidmi a postižením. Praha: Portál, 2010, ISBN 978-80-7367-691-9
- Kol. autorov: Od integrácie k inklúzii. VÚDPaP: Bratislava, 2018, ISBN 978-80-89698-27-1

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 124

A	B	C	D	E	FX
76,61	17,74	4,03	0,0	0,0	1,61

Lecturers: Mgr. Ľudmila Hlinová

Last change: 15.03.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-171/22	Innovations in finance

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: 6.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: active participation in classes, elaboration of assignments, continuous test
Final evaluation: written exam
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
By completing this course, the student will gain an overview of the basic innovative approaches to investment and financial markets. Student will be able to process a large amount of information and data, gain an overview of their availability in the field of innovative potential of financial products and, using several analyzes, process information on banking transformation, innovation trends and indices across countries. In connection with current situation at the market, student will be able to evaluate the riskiness of a given innovation and its effects on the financial sector.

Class syllabus:
Innovation and innovation potential. Blockchain. FinTech. Banking transformation. Trends in banking and investment. Opportunities and threats of technology in the light of cyber security. Big data and data management. Artificial intelligence at financial markets. Financial innovation valuation models. Crisis periods and innovations. Innovative vrz. alternative finance. Multichannel banking alternatives. Cloud solutions for financial markets. P2P technology. Micro/nano-services in the finance.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 25

A	B	C	D	E	FX
96,0	4,0	0,0	0,0	0,0	0,0

Lecturers: doc. PhDr. Daniela Majerčáková, PhD., MBA
Last change: 15.03.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-MMN-370/00	Insurance Mathematics

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: 5.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-282/00 - Probability and Statistics (2)

Course requirements:
The course assessment consists of one tests (100%), which is usually written during the final weeks of the semester. To successfully complete the course, it is necessary to obtain at least half of the points on the test.
Grade thresholds: A: at least 90.00%; B: 89.99% – 80.00%; C: 79.99% – 70.00%; D: 69.99% – 60.00%; E: 59.99% – 50.00%; Fx: 49.99% – 0.00%.
Scale of assessment (preliminary/final): Practical work during semester 100% / final exam 0%.

Learning outcomes:
After completing the course, the student receives an overview of the basics of insurance business, classical life insurance products, net and gross premium calculation and methods of reserving. The student will be able to valuate basic life insurance products.

Class syllabus:
Introduction to insurance business. Compounding and discounting. Life tables, biometric (mortality) risk. Life insurance: the deterministic approach and the equivalence principle. Assets and liabilities of the insurance company. Basic and some other types of life insurance: pure endowment, term insurance, endowment, insurance with a fixed-period payout. Whole life insurance, term insurance and deferred insurance. Life annuities: present value of life annuities, annuity-due and immediate annuity, annuities with linearly increasing or linearly decreasing benefits. Temporary and lifetime annuities. Single premium and level premium. Net premium and gross premium. Net premium reserves, expense-loaded premium reserves, gross premium, adequate reserves Calculations of premium reserves in the case of single premium or level premium.

Recommended literature:
Life Insurance Mathematics / Hans U. Gerber. Heidelberg : Springer, 1997, ISBN 978-3-662-03460-6;
Modely v životnom a neživotnom poistení / Rastislav Potocký. Bratislava : STATIS, 2012, ISBN 978-80-85659-71-9;
study materials of the lecturer.

Languages necessary to complete the course:

Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 620

A	B	C	D	E	FX
33,71	19,19	19,84	15,16	9,84	2,26

Lecturers: Mgr. Gábor Szűcs, PhD.

Last change: 12.12.2025

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-572/24	Insurance Mathematics Classes

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: 5.

Educational level: I.

Prerequisites:

Course requirements:
The course assessment consists of one tests (100%), which is usually written during the final weeks of the semester. To successfully complete the course, it is necessary to obtain at least half of the points on the test.
Grade thresholds: A: at least 90.00%; B: 89.99% – 80.00%; C: 79.99% – 70.00%; D: 69.99% – 60.00%; E: 59.99% – 50.00%; Fx: 49.99% – 0.00%.
Scale of assessment (preliminary/final): Practical work during semester 100% / final exam 0%.

Learning outcomes:
After completing the course, the student receives an overview of the classical life insurance products, net and gross premium calculations and methods of reserving. The student will be able to valuate basic life insurance products and assess the obtained results.

Class syllabus:
General principles of life insurance. Compounding and discounting. Deterministic approach. Net premium principle. Basic insurance products: pure endowment, assurances (whole life insurance, term insurance, deferred insurance), endowment, insurance products with variable sum insured. Annuities (whole life, temporary, deferred, with variable benefits). Net and gross premiums. Policy values, loss function, prospective net premium reserves.

Recommended literature:
Life Insurance Mathematics / Hans U. Gerber. Heidelberg : Springer, 1997, ISBN 978-3-662-03460-6;
Introduction to Insurance Mathematics / Annamaria Olivieri, Ermanno Pitacco. Cham : Springer, 2015, ISBN: 3319213768;
study materials of the lecturer.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 12					
A	B	C	D	E	FX
33,33	33,33	0,0	8,33	16,67	8,33
Lecturers: Mgr. Matúš Padyšák, PhD., Mgr. Gábor Szűcs, PhD.					
Last change: 12.12.2025					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-FM.KEF/1-MMN-140/22	Introduction to Accounting (1)

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

Number of credits: 5

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment for the term (40 percent), exam (60 percent).
The condition for completing the course is to complete two control papers during the course (with a success rate of at least 50 percent - the result is the bonus points for the exam). Present the knowledge outlined in the brief syllabus.
The evaluation of the course is in accordance with the Study Regulations of Comenius University and the individual levels of the classification scale are awarded on the basis of the applied points system, which reflects the degree of success of completing the course.
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
The student is able to give a comprehensive picture of accounting with regard to its subject and understand the role of accounting in the company's information system, describe basic accounting concepts, balance sheet accounting theory, accounting documents, valuation issues, financial statement processes and international accounting harmonization, and taxes from the aspect of decision making process.

Class syllabus:
1. The importance of accounting as part of a business information system
2. The objectives and functions of accounting
3. General accounting principles
4. Assets and liabilities
5. Balance sheet, its content and role. Impact of economic operations on a balance sheet.
6. Double-entry accounting (bookkeeping) system
7. Accounting documents, books of account
8. Valuation of assets and liabilities in the double entry accounting (bookkeeping). Understanding the cycle of assets by the double entry accounting (bookkeeping)
9. The financial statements and its structure
10. Conceptual framework of IFRS and principles of IFRS conversion from Slovak financial statements to the financial statements according to the IAS / IFRS

11. Accounting and taxes
12. Taxes and decision making process

Recommended literature:
1. Paul D. Kimmel, Jerry J. Weygandt, Donald E. Kieso- Financial Accounting: Tools for Business
Decision Making, WileyPLUS, 7th Edition, 2013
2. Jerry J. Weygandt, Paul D. Kimmel, Donald E. Kieso- Financial and Managerial Accounting, WileyPLUS, 2nd Edition, 2015

Languages necessary to complete the course:
english

Notes:

Past grade distribution
Total number of evaluated students: 694

A	B	C	D	E	FX
37,18	18,88	21,61	12,1	8,36	1,87

Lecturers: prof. RNDr. Darina Saxunová, PhD., doc. Ing. Jana Kajanová, PhD., Mgr. Pavel Danihel, PhD.

Last change: 21.01.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-FM.KEF/1-MMN-270/22	Introduction to Financial Management

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

Number of credits: 5

Recommended semester: 4.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: active participation in classes, continuous test, condition for the exam is min. 70% of the interim evaluation (i.e. 28 points)
Exam: written exam - theoretical and computational part
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
To provide students with basic knowledge of the financial management of business entities, asset valuation and the basic ability to independently decide on the possibility of investing based on preferences and market conditions.

Class syllabus:
Introduction to the financial management: financial markets, investments, products, instruments, environment, value management of a business entity.
Financial statement analysis: ratios, cash flow analysis, comparative market analysis and trend analysis, critical financial statement analysis, bankruptcy and creditworthiness models, economic value added.
Risk and return: financial assets and their risks, required/expected return, measurement of isolated risk, portfolio risk, diversification and volatility of investment portfolios, security market line (SML), effective set, indifference curves, optimal portfolio, capital asset pricing model (CAPM).
Time value of money: future value, present value, annuity, perpetuity, effective annual interest rate (EAR), discount.
Valuation models: general valuation model, types and basic properties of securities, present value of the bond; yield, interest rate and reinvestment risk of bonds; valuation of preference and ordinary shares, discounted dividend model.
Weighted average cost of capital: price of individual components of capital, weighted average cost of capital (WACC), optimal capital budget.
Evaluation of capital investments: net present value of the project (NPV), internal rate of return of the project (IRR), profitability index of the project, project financing.

Evaluation based on ESG factors: sustainable investments, green investments, evaluation parameters of business entities.

Recommended literature:

Financial management. Theory and practice: Eugene F. Brigham, Michael C. Ehrhardt. Cengage Learning, 16th edition, 2019

Principles of Corporate Finance: Richard A. Brealey, Stewart C. Myers, Franklin Allen. McGraw Hill, 13th edition, 2019

Routledge Handbook of Social and Sustainable Finance: ed. Othmar M. Lehner. Routledge, 2018

Languages necessary to complete the course:

English

Notes:

Past grade distribution

Total number of evaluated students: 607

A	B	C	D	E	FX
21,91	29,32	21,09	12,19	10,71	4,78

Lecturers: doc. PhDr. Daniela Majerčáková, PhD., MBA

Last change: 15.03.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/1-AIN-406/22	Language and Cognition

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: 2., 4., 6.

Educational level: I., I.II.

Prerequisites:

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

Learning outcomes:
Acquisition of the most important current theories and methods of studying natural language and cognitive processes.

Class syllabus:
The course focuses on the most important aspects of natural language research (the most complex cognitive function): basic properties of language (arbitrariness, generative productivity, dynamism, structuring at many levels), mechanisms of speech production and perception, language acquisition, innate and acquired factors of language development.

Recommended literature:
G. Dorren: Babel. Around the World in 20 Languages. Profile Books, 2019
S. Pinker: Language Instinct. ſBrilliance Audio, 2014
S. Pinker: The Stuff of Thought. Language as a Window Into Human Nature. Penguin Books 2008
S. Pinker: Words and Rules. The lngredients of Language. Basic Books 2015

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 172

A	B	C	D	E	FX
37,79	23,84	15,12	11,05	5,23	6,98

Lecturers: doc. PhDr. Ján Rybár, PhD.

Last change: 17.05.2024
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-MMN-120/22	Linear Algebra and Geometry (1)

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

Number of credits: 4

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
Ongoing evaluation during the semester: homeworks, midterm
Final exam: written and oral
Approximate grade scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Explanation of the basic notions and the algebraic apparatus needed for other mathematical branches and for understanding of mathematical methods in economics, finance, and management.

Class syllabus:
Basic concepts (integers, sets, mappings, binar relations, groups, rings, fields). Vector spaces, subspaces. Linear dependence, basis and dimension. Linear sums of the subspaces. Linear mappings, matrices. Regular mappings, inverse matrices. Systems of linear equations, determinants. Euclidean vector spaces.

Recommended literature:
J. Korbas: Linearna algebra a geometria I
J. Smital, E. Gedeonova, S. Znam: Uvod do linearnej algebry
J. Smii tal, E. Gedeonova: Linearna Algebra
P. Zlatos: Linearna algebra a geometria
Jim Hefferon: Linear Algebra
Robert A. Beezer: A First Course in Linear Algebra
Steven J. Leon: Linear Algebra with Applications, 9th Edition, Pearson Education

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 766

A	B	C	D	E	FX
18,41	17,36	19,19	17,62	20,37	7,05

Lecturers: prof. RNDr. Róbert Jajcay, DrSc., doc. RNDr. Pavel Chalmovianský, PhD., Mgr. Samuel Kalužný

Last change: 14.03.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-MMN-160/22	Linear Algebra and Geometry (2)

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

Number of credits: 4

Recommended semester: 2.

Educational level: I.

Prerequisites: FMFI.KAG/1-MMN-120/22 - Linear Algebra and Geometry (1)

Course requirements:
Ongoing evaluation during the semester: quizzes, homeworks, midterms
Final exam: written and oral
Approximate grade scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
To build upon the previously introduced concepts of the theory of vector spaces (LaG1) - groups of linear transformations and the corresponding matrix theory. Master the basics of the theory of algebraic structures - groups, rings, fields, ...

Class syllabus:
Groups of linear transformations of a vector space. Similar matrices (eigenvalues, eigenvectors , characteristic and minimal polynomial). Bilinear and quadratic forms (spectral decomposition of the symetric matrix). Groups (subgropus, cyclic groups). Finite groups (Lagrange theorem). Homomorphisms of groups (quotient group). Rings, integral domains, fields. Polynomial rings (selected facts about polynomials).

Recommended literature:
J. Korbas: Linearna algebra a geometria I
J. Smital, E. Gedeonova, S. Znam: Uvod do linearnej algebry
J. Smital, E. Gedeonova: Linearna Algebra
P. Zlatos: Linearna algebra a geometria
Jim Hefferon: Linear Algebra
Robert A. Beezer: A First Course in Linear Algebra
Steven J. Leon: Linear Algebra with Applications, 9th Edition, Pearson Education

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 704

A	B	C	D	E	FX
19,46	17,47	20,6	19,89	16,9	5,68

Lecturers: doc. RNDr. Pavel Chalmovianský, PhD.

Last change: 14.03.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-MMN-560/22	Linear Algebra and Geometry (3)

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: I.

Prerequisites:

Recommended prerequisites:
1-MMN-120/22 Linear algebra and geometry (1)

Course requirements:
regular homework
Grading: A 90%, B 80%, C 70%, D 60%, E 50%

Learning outcomes:
The graduate of the course masters the analytical methods of studying the affine and metric properties of linear geometric objects in E^n, and the theory of quadratic forms and its application to conic sections in E^2.

Class syllabus:
- n-dimensional affine space A^n and Euclidean space E^n;
- coordinate systems;
- affine maps;
- orientation of affine space;
- subspaces / linear varieties in E^n: parametric description and implicit equations, relative positions, distances and angles of some subspaces;
- quadratic forms, canonical form, Lagrange's method, Sylvester's law of inertia;
- application of quadratic forms to the theory of conic sections.

Recommended literature:
Geometria 1: Pre študentov matematiky učiteľského štúdia na univerzitách a pedagogických fakultách / Milan Hejný, Valent Zaťko, Pavel Kršňák. Slovenské pedagogické nakladateľstvo, 1985
Lineárna algebra a geometria: Cesta z troch rozmerov s presahmi do príbuzných odborov / Pavol Zlatoš. Albert Marenčin, 2011
Linear Algebra and Geometry / Alexei I. Kostrikin, Yu. I. Manin. Gordon and Breach Science Publishers, 1997

Languages necessary to complete the course:

slovak

Notes:

Past grade distribution
Total number of evaluated students: 310

A	B	C	D	E	FX
39,03	11,94	13,55	14,84	19,68	0,97

Lecturers: RNDr. Jana Chalmovianská, PhD.

Last change: 21.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-255/00	Linear Programming

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

Number of credits: 5

Recommended semester: 3.

Educational level: I., II.

Prerequisites: FMFI.KAG/1-MMN-160/22 - Linear Algebra and Geometry (2)

Course requirements:
Continuous assessment: exercises: 40%, Exam: 60%.
The student must obtain at least half of the points for the exercises in order to pass the final written exam.
Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): 40% / 60%

Learning outcomes:
Students master the basics of linear programming (simple models of real problems, relevant geometry, duality theory and some of the simplex methods, the idea of interior point methods). At the same time, they will gain an overview of possible applications of linear programming in other scientific fields, or in practice.

Class syllabus:
Geometric approach to solving linear programming problems. Practical problems formulation in the form of LP. Fundamentals of convex analysis (convex set, polyhedrons, extreme points, separation theorems, theorems of alternatives). Basic solutions and connection with extreme points. Simplex method (basic idea, two-phase and dual simplex method). Duality theory (duality and complementarity theorems) and its applications and economic interpretation. Idea of interior point methods for linear programming, central path. Modern applications of linear programming.

Recommended literature:
Mária Trnovská: Lineárne programovanie, online text.
Lineárne programovanie / Ján Plesník, Jitka Dupačová, Milan Vlach. Bratislava : Alfa, 1990
Robert J. Vanderbei: Linear programming: Foundations and extensions, Kluwer Academic Publishers, 2000.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 620

A	B	C	D	E	FX
12,58	15,65	18,23	22,1	24,52	6,94

Lecturers: doc. RNDr. Mária Trnovská, PhD., RNDr. Patrik Mihala, PhD., Mgr. Tomáš Rusin, PhD.

Last change: 14.07.2025

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-FM.KMn/1-MMN-130/22	Management (1)

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

Number of credits: 5

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
Continuos evaluation (60%) - case studies, midterm test, final test. Exam (40%).
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
After completing the course, the student will gain comprehensive knowledge from selected areas of management theory and become familiar with the basic procedures for identifying and solving problems in managerial practice. The content of the course also focuses on developing the managerial skills and abilities of the students. Through discussions and solving case studies, the student improves the correct use of management terminology as a scientific discipline, expands his knowledge and improves the necessary skills for further study and managerial practice.

Class syllabus:
1. Management and managers.
2. Management theory development - first half of the 20th century.
3. Management theory development - second half of the 20th century and the beginning of the 21st century.
4. Organizational environment.
5. Management in a global environment.
6. Organizational culture.
7. Managerial ethics and social responsibility.
8. Strategic management.
9. Planning in management.
10. Managerial decision-making.

Recommended literature:
[1] COPUŠ, L. a kol. Manažment. Bratislava: Univerzita Komenského v Bratislave, 2024. [online]. Dostupné na: https://stella.uniba.sk/texty/FM_LCakol_manazment_2ed.pdf
[2] ROBBINS, P. R. – COULTER, M. Management. Harlow: Pearson, 2021.

[3] Collective of authors. 2020. Principles of Management. Minneapolis: University of Minnesota. [online]. Dostupné na: https://saylordotorg.github.io/text_principles-of-management-v1.1
[4] STACHO, Z. – STACHOVÁ, K. Základy manažmentu. Trnava: Univerzita sv. Cyrila a Metoda v Trnave, 2020. [online]. Dostupné na: https://www.ucm.sk/files/sk/ine-pracoviska/centrum-informacnych-zdrojov-ucm-trnave/referat-informacnych-sluzieb/e-zdroje/ucebne-texty-k-stiahnutiu/zaklady_manazmentu.pdf
[5] WOJČÁK, E. a kol. Manažment. Bratislava: Univerzita Komenského v Bratislave, 2017.
[6] MAJTÁN, M. a kol. Manažment. Bratislava: Sprint dva, 2016.
[7] SEDLÁK, M. – LIŠKOVÁ, C. Manažment. Bratislava: Wolters Kluver, 2016.
[8] Databases of the Academic library Comenius University, Center of science-technical information SR.

Languages necessary to complete the course:
Slovak and English language

Notes:

Past grade distribution
Total number of evaluated students: 774

A	B	C	D	E	FX
24,68	22,87	16,93	12,14	17,57	5,81

Lecturers: prof. Mgr. Anna Lašáková, PhD., doc. PhDr. Lukáš Copuš, PhD., Mgr. Lenka Jašušáková, doc. Ing. Mgr. Ľubomíra Strážovská, PhD.

Last change: 18.08.2025

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-FM.KMn/1-MMN-131/22	Management (2)

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

Number of credits: 5

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:
Oral exam (max. 100%).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The result of the course is to provide basic knowledge of management, while students in lectures acquainted with the main approaches and principles of selected areas of management.

Class syllabus:
1. Basics of organizing.
2. Job design.
3. Human resource management.
4. Individual and group behavior.
5. Motivation of employees.
6. Leadership theories.
7. Communication and interpersonal skills.
8. Controlling as a function of management.
9. Change management.
10. Self management and time management.

Recommended literature:
[1] WOJČÁK, E. - RUDY, J. - BAJZÍKOVÁ, Ľ. a kol. Manažment, UK Bratislava, 2017.
[2] PIŠKANIN A. – RUDY J. a kol.: Manažment klasické teórie a moderné trendy, UK Bratislava, 2010.
[3] SEDLÁK M.: Manažment. Iura Edition, Bratislava 2009.
[4] ROBBINS, P. R. - COULTER, M.: Management, Harlow : Pearson education limited, 2018, 14th edition. p 751. ISBN 978-1-292-21583-9
[5] ROBBINS, P. R. - COULTER, M. with contributions by MARTOCCHIO, J. J., KONG, L. K.: Management, Harlow : Pearson education limited, 2016, 13th edition. p. 717 . ISBN 978-1-292-09020-7

[6] Journal of Human Resource Management. ISSN 2453 – 7683-[online] www.jhrm.eu

Languages necessary to complete the course:
English language

Notes:

Past grade distribution
Total number of evaluated students: 511

A	B	C	D	E	FX
31,12	27,4	14,48	10,57	11,55	4,89

Lecturers: doc. PhDr. Lukáš Copuš, PhD., prof. Mgr. Anna Lašáková, PhD., Zora Mária Frešová, MSc., Ing. Ivan Skaloš, PhD.

Last change: 21.01.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-FM.KMk/1-MMN-340/22	Marketing

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

Number of credits: 5

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:
40 % interim evaluation:
- active attendance on seminars (in case of unjustified absence or unpreparedness on seminar loss of 10 %)
- interim evaluation (2 written intermediate tests 10 %)
- semester project – application of theoretical knowledge on selected organization – 30 %
60 % final evaluation:
- exam – written test (corrective dates – oral exam)
The overall student rating consists of the sum of the percentages for active attendance on seminars the semester project, and of the percentage obtained from the exam. Exam is written. System of interim evaluation is set on the beginning of semester.
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
The aim of the course is to acquire the basic knowledge from the various areas of marketing theory. The subject emphasizes the importance and benefits of basic marketing postulates in terms of the interconnection of the organization and its customers. Emphasis is placed on acquiring skills in marketing decision-making and performing individual marketing activities of the organization, especially in strategic and marketing planning, market segmentation and market positioning, marketing research, analysis of marketing environment and consumer and organizational purchasing behavior in designing of marketing mix and in exploitation of international marketing. The subject also emphasizes the impact of the online environment and the selected specifics of digital marketing. In addition to gaining theoretical knowledge, the subject is also aimed at stimulating the students' ability to apply the marketing concept in economic practice.

Class syllabus:
1. Position and importance of marketing in company development.
2. The nature of the marketing concept.
3. Strategic planning and marketing management.
4. Importance of marketing planning.

5. Marketing environment.
6. Marketing information system and marketing research.
7. Shopping behavior of consumers in organizations.
8. Market segmentation, target group selection and creation of market position.
9. Marketing mix and advanced marketing mix.
10. Product as a marketing mix tool.
11. Pricing and pricing strategy of the company.
12. Distribution channels and physical distribution.
13. Marketing communication and marketing communication mix.
14. International marketing.

Recommended literature:

[1] BARTÁKOVÁ, G. – CIBÁKOVÁ, V. – ŠTARCHOŇ, P.: Základy marketingu. 2. rozšírené vydanie. Bratislava: 2007. ISBN 978-80-969834-4-5
[2] KOTLER, P. – ARMSTRONG, G.: Marketing. Praha: Grada 2007. ISBN 80-247-0513-3
[3] KOTLER, P. – WONG, V. – SAUNDERS, J. – ARMSTRONG, G.: Moderní marketing. Praha: Grada Publishing 2007. ISBN 8024715457
[4] BAINES, P. – FILL, C. – PAGE, K.: Marketing. Oxford: Oxford University Press 2011. ISBN 978-0-19-957961-7
[5] BLYTHE, J.: Principles and Practice of Marketing. 2nd Editon. Hampshire: Cengage Learning EMEA 2009. ISBN 978-1-4080-114-78
[6] ARMSTRONG, G. – KOTLER, P.: Marketing: An Introduction. 8th Editon. Upper Saddle River: Pearson Education, Inc. 2007. ISBN 0-13-186591-9 – vybrané kapitoly.
[7] BRASSINGTON, F. – PETTITT, S.: Principles of Marketing. Harlow: Prentice Hall 2006. ISBN 0-273-69559-2
[8] Marketing Science and Inspirations, Marketing&Media.
With regard to new and available resources, supplementary literature will be updated on a continuous basis.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 617

A	B	C	D	E	FX
27,55	30,15	20,42	12,16	8,1	1,62

Lecturers: prof. Mgr. Peter Štarchoň, PhD., Mgr. Lujza Gunišová

Last change: 16.02.2026

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-110/00	Mathematical Analysis (1)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 52 / 26
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
For the semester, the student can get 15 points for exercises, 40 points for written exams, the final written exam has a weight of 30 points, the final oral exam weighs 15 points. The student must obtain at least 45 points from the exercises, written exams and the final written exam, at least 15 points from the final written exam and at least 5 points from the final oral exam. Grading: A (91-100 points), B (81-90 points), C (71-80 points), D (61-70 points), E (51-60 points), Fx (0-50 points).
Weight of the ongoing / final assessment: ongoing assessment 55% (15% exercise + 40% written exams) / 45% (30% final written exam, 15% final oral exam).
Scale of assessment (preliminary/final): 55/45

Learning outcomes:
After completing the course, the student can use the apparatus of differential calculus of functions of one real variable in solving appropriate problems of theoretical and practical focus.

Class syllabus:
Real numbers, functions of real variables. Limit of the function, basic theorems on limits. Compact sets. Continuity of a function in a point and on a set, basic properties of continuous functions on intervalas and compact sets. Derivative and general rules for differentiation. Repeated differentiation. Mean value theorems. Applications of the derivative. L´Hospital´s rule. Taylor´s polynomials.

Recommended literature:
Rudin, Walter: Principles of mathematical analysis, ISBN 0-07-054235-X
Hildebrandt, Stefan: Analysis I, ISBN 3-540-42838-0
Forstter, Otto: Analysis I, ISBN 3-528-57224-8
Neubrunn, Tibor a Vencko, Jozef: Mathematical Analysis I, textbook of FMFI UK
Kubáček, Valášek: Cvičenia z Matematickej analýzy 1,2

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1059

A	B	C	D	E	FX
9,44	9,35	12,75	24,55	29,18	14,73

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., Mgr. Michaela Vargová, PhD., Mgr. Július Pačuta, PhD., Mgr. Jana Havlíčková, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-150/00	Mathematical Analysis (2)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 52 / 26
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 2.

Educational level: I.

Prerequisites: FMFI.KMANM/1-MAT-110/00 - Mathematical Analysis (1)

Course requirements:
For the semester, the student can get 15 points for exercises, 40 points for written exams, the final written exam has a weight of 30 points, the final oral exam weighs 15 points. The student must obtain at least 45 points from the exercises, written exams and the final written exam, at least 15 points from the final written exam and at least 5 points from the final oral exam. Grading: A (91-100 points), B (81-90 points), C (71-80 points), D (61-70 points), E (51-60 points), Fx (0-50 points).
Weight of the ongoing / final assessment: ongoing assessment 55% (15% exercise + 40% written exams) / 45% (30% final written exam, 15% final oral exam).
Scale of assessment (preliminary/final): 55/45

Learning outcomes:
After completing the course, students will be able to use the apparatus of integral calculus of functions of one real variable, series and series of functions to solve appropriate computational and theoretical problems.

Class syllabus:
Antiderivatives and indefinite integrals and techniques of integration. The definite integral and its properties. Integral as a limit of integral sums. Derivatives with variable endpoints. The fundamental theorem. Mean value theorems. Applications of the integral. Series of positive terms. Absolutely and conditionally convergent series. Series of functions. Pointwise and uniform convergence. Power series. Taylor series.

Recommended literature:
Rudin, Walter: Principles of mathematical analysis, ISBN 0-07-054235-X
Hildebrandt, Stefan: Analysis I, ISBN 3-540-42838-0
Forstter, Otto: Analysis I, ISBN 3-528-57224-8
Neubrunn, Tibor a Vencko, Jozef: Mathematical Analysis I, textbook of FMFI UK
Kubáček, Valášek: Cvičenia z Matematickej analýzy 1,2, textbook of FMFI UK

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 855

A	B	C	D	E	FX
13,57	10,29	18,36	26,67	27,72	3,39

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., Dr. Hana Šmitala Mizerová, Mgr. Jana Havlíčková, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-210/22	Mathematical Analysis (3)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 52 / 26
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 3.

Educational level: I., II.

Prerequisites: (FMFI.KMANM/1-MAT-150/00 - Mathematical Analysis (2) and (FMFI.KAG/1-MMN-160/22 - Linear Algebra and Geometry (2) or FMFI.KAG/1-MAT-160/15 - Linear Algebra and Geometry (2))) or FMFI.KMANM/1-INF-150/22 - Mathematical Analysis (2)

Course requirements:
For the semester, the student can get 20 points for exercises, 30 points for written exams, the final written exam has a weight of 30 points, the final oral exam weighs 20 points. The student must obtain at least 40 points from the exercises, written exams and the final written exam, at least 15 points from the final written exam and at least 10 points from the final oral exam. Grading: A (91-100 points), B (81-90 points), C (71-80 points), D (61-70 points), E (51-60 points), Fx (0-50 points).
Weight of the ongoing / final assessment: ongoing assessment 50% (20% exercise + 30% written exams) / 50% (30% final written exam, 20% final oral exam).
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Absolvent of the subject has basic knowledge of metric spaces and differential calculus of scalar and vector functions of several variables and is capable of applying it for solving particular tasks in differential calculus of functions of several variables.

Class syllabus:
1. Metric spaces
n-dimensional Euclidean space Rn, convergence and Cauchy sequence in Rn, metric spaces, convergence in a metric space, complete metric space, normed space, Banach space, Banach fixed point theorem, topology of metric spaces, compact and convex sets, convex functions
2. Limit and continuity
limit and continuity in metric spaces, continuous vector functions, continuity and compactness
3. Differential calculus of functions of several variables
partial derivatives, gradient, total differential and differentiability, derivative of a compound function, directional derivative, Taylor theorem and local extrema
4. Implicitly given functions
implicit function theorem, constrained extrema, Lagrange multipliers

Recommended literature:

J. Filo, K. Rostás: 2^2 × 13 prednášok z matematickej analýzy, Vydavateľstvo UK, 2016.
W. Walter: Analysis 2. Springer, Berlin, 2002.
W. Rudin: Principles of mathematical analysis. McGraw-Hill, Singapore, 1976.
B. P. Demidovich: Problems in Mathematical Analysis, Beekman Books, 1975.
I. Kluvánek, L. Mišík, M. Švec: Matematika 1. SVTL, Bratislava, 1966.
W. Fleming: Functions of Several Variables, Springer-Verlag, New York-Heidelberg-Berlin 1997.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 846

A	B	C	D	E	FX
9,93	9,22	14,66	22,34	29,91	13,95

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., RNDr. František Jaroš, PhD., RNDr. Kristína Rostás, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-250/22	Mathematical Analysis (4)

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

Type, volume, methods and workload of the student - additional information
2/0 two tests during the semester (can be alternated with work on an exercise, which is supplementary) and an exam

Number of credits: 3

Recommended semester: 4.

Educational level: I.

Prerequisites: FMFI.KMANM/1-MAT-210/22 - Mathematical Analysis (3)

Course requirements:
Interim and final examination. Continuous exam: writing sessions on exercises (60) (it is possible to substitute), final exam (40).
Grades: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): 60/ 40

Learning outcomes:
The student will gain practical skills in working with improper integrals on a straight line, with integration in a plane and space and will get acquainted with the concept and use of Fourier series theory.

Class syllabus:
1. Improper integral in R ^ 1.
2. Parametric integrals
3. Integrals in R ^ n
4. Fourier series.

Recommended literature:
Fourierove rady a Fourierov integrál / Michal Demetrian. Bratislava : Univerzita Komenského, 2012 Matematika pre štúdium technických vied : 2. diel / Igor Kluvánek, Ladislav Mišík, Marko Švec. Bratislava : Alfa, 1970 Zbierka úloh z vyššej matematiky : 1. časť / Jozef Eliaš, Ján Horváth, Juraj Kajan. Bratislava : Alfa, 1971

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 197					
A	B	C	D	E	FX
8,12	11,68	14,72	25,38	25,89	14,21
Lecturers: doc. RNDr. Michal Demetrian, PhD., RNDr. František Jaroš, PhD.					
Last change: 18.02.2026					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-510/00	Mathematical Analysis Complementary Classes (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.

Educational level: I.

Prerequisites:

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

Learning outcomes:
Mathematical analysis.

Class syllabus:
Revision of all basic notions seen in the lecture and going through the most typical situations which the students can meet during the study of the subject. Giving sufficient number of practical exercises for homework and to discuss their solutions when necessary.

Recommended literature:
The current textbooks recommended by the course teacher.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 720

A	B	C	D	E	FX
53,89	14,86	10,42	8,19	6,67	5,97

Lecturers: RNDr. František Jaroš, PhD., Mgr. Michaela Vargová, PhD., doc. RNDr. Michal Demetrian, PhD., Mgr. Dušan Daniel

Last change: 17.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-520/00	Mathematical Analysis Complementary Classes (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.

Educational level: I.

Prerequisites:

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

Learning outcomes:
Mathematical analysis.

Class syllabus:
Revision of all basic notions seen in the lecture and going through the most typical situations which the students can meet during the study of the subject. Giving sufficient number of practical exercises for homework and to discuss their solutions when necessary.

Recommended literature:
The current textbooks recommended by the course teacher.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 593

A	B	C	D	E	FX
66,61	14,33	8,43	4,22	5,06	1,35

Lecturers: RNDr. František Jaroš, PhD., Mgr. Jana Havlíčková, PhD.

Last change: 24.04.2017

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-565/22	Mathematical Analysis Complementary Classes (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.

Educational level: I.

Prerequisites:

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

Learning outcomes:
Active knowledge of differential calculus of functions of several variables.

Class syllabus:
1. Metric spaces n-dimensional Euclidean space Rn, convergence and Cauchy sequence in Rn, metric spaces, convergence in a metric space, complete metric space, normed space, Banach space, Banach fixed point theorem, topology of metric spaces, compact and convex sets, convex functions 2. Limit and continuity limit and continuity in metric spaces, continuous vector functions, continuity and compactness 3. Differential calculus of functions of several variables partial derivatives, gradient, total differential and differentiability, derivative of a compound function, directional derivative, Taylor theorem and local extrema 4. Implicitly given functions implicit function theorem, constrained extrema, Lagrange multipliers

Recommended literature:
The current textbooks recommended by the course teacher.

Languages necessary to complete the course:

Notes:
Supplementary course to the lecture Mathematical Analysis (3). Providing a sufficient number of ideas and examples for homework and consultations to solve these tasks.

Past grade distribution
Total number of evaluated students: 80

A	B	C	D	E	FX
53,75	21,25	11,25	7,5	5,0	1,25

Lecturers: RNDr. František Jaroš, PhD.

Last change: 14.03.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-566/23	Mathematical Analysis Complementary Classes (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.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 38

A	B	C	D	E	FX
34,21	10,53	21,05	18,42	15,79	0,0

Lecturers: RNDr. František Jaroš, PhD.

Last change:

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-MMN-365/00	Mathematical Statistics

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

Number of credits: 5

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-282/00 - Probability and Statistics (2) and FMFI.KAG/1-MMN-160/22 - Linear Algebra and Geometry (2)

Course requirements:
Preliminary semester evaluation: exams (30%), homework (40%);
Examination: test and oral examination (30%);
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
To give students overview of basic statistical methods.

Class syllabus:
Random vectors, their probability distribution and characteristics. Transformation of random vectors. Random sampling, sample mean and dispersion. Random sampling from normal distribution. Point estimate and its properties. Rao - Cramer theorem. The method of maximal likelihood and the moment method. Interval estimate. Statistical hypotheses testing, Neymann - Pearson lemma. Goodness of fit test. Basic regression models.

Recommended literature:
Anděl J.: Statistické metody, Praha: Matfyzpress, 1988;
Anděl J.: Základy matematické statistiky, Praha: Matfyzpress, 2005;

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 513

A	B	C	D	E	FX
23,0	18,32	23,39	20,47	12,67	2,14

Lecturers: Mgr. Jozef Kováč, PhD.

Last change: 16.06.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

STATE EXAM DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KMANM/1-MMN-962/22	**Course title:** Mathematics and Management
Number of credits: 4	
Educational level: I.	
State exam syllabus:	
Last change: 21.01.2022	
Approved by: doc. RNDr. Michal Demetrian, PhD.	

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-172/22	Mathematics in Python

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

Type, volume, methods and workload of the student - additional information
0/2

Number of credits: 3

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:
Active participation, submission of assignments.
Grades: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student will gain practical knowledge with the possibilities of the Python programming language in the problems of mathematical analysis and linear algebra in the range of basics. (Differential and integral calculus, difference equations, numerical and symbolic derivation and integration, working with graphs and dependencies. Solving linear algebra problems.)

Class syllabus:
Fundamentals of mathematics in Python. Related libraries. Python and functions and their evaluation. Graphs of functions. Functions as tables. Vector features. Parametric graphs. Areas. Extremalization tasks. Derivation and integration, numerical and symbolic.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 47

A	B	C	D	E	FX
23,4	19,15	17,02	14,89	12,77	12,77

Lecturers: doc. RNDr. Michal Demetrian, PhD.

Last change: 21.01.2025
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-MMN-321/10	Matrix Calculus

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

Number of credits: 4

Recommended semester: 3.

Educational level: I.

Prerequisites: FMFI.KAG/1-MMN-160/22 - Linear Algebra and Geometry (2)

Course requirements:
Semester: homework, midterm exam
Exam: written exam
Approximate grade scheme: A 75%, B 65%, C 55%, D 45%, E 35%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Student will gain basic theoretical knowledge to master the mathematical apparatus, which is standardly used to solve problems of applied mathematics. This course will provide her/him an overview how to solve various problems of numerical algebra.

Class syllabus:
Examples of the occurrence of matrices in practical tasks. LU-decomposition of a matrix and its modifications. Matrix norms. Projective (orthogonal and nonorthogonal) matrix. Last square problem. Generalized inverse matrix. QR-decomposition of a matrix (Gram-Schmidt orthogonalization, Householder's construction). Singular value decomposition of a matrix. Spectral properties of matrix. Gershgorin's theorem. Schur´s theorem. Several canonical forms of matrix. Hessenberg form of a matrix. Matrix functions defined over spectra of matrices. Normal matrix. Symmetric, positive definite, Hermitian matrix. The introduction to Perron-Frobenius's theory of nonnegative matrices. Practical applications for problems of numerical algebra.

Recommended literature:
Carl D. Meyer: Matrix Analysis and Applied Linear Algebra, SIAM, 2001
G. Strang: Linear Algebra and Its Applications, 4th edition, Cengage Learning, 2006
M. Fiedler: Speciální matice a jejich použití v numerické matematice, SNTL, Praha, 1981

Languages necessary to complete the course:
English, Slovak

Notes:

Past grade distribution Total number of evaluated students: 254					
A	B	C	D	E	FX
7,09	20,87	28,35	26,77	14,96	1,97
Lecturers: Mgr. Martin Niepel, PhD., Mgr. Tomáš Rusin, PhD.					
Last change: 14.03.2022					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-FM/1-MMN-341/22	Modern marketing - new trends

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

Number of credits: 5

Recommended semester: 6.

Educational level: I.

Prerequisites:

Course requirements:
60% - active participation in seminars (in case of unjustified absence or unpreparedness 10% loss per seminar), semester project - application of acquired theoretical knowledge to selected organization - 30%, semester work on a pre-selected and approved topic - 30%, 40% - final written test via MS Forms.
Weight of the intermediate / final evaluation: 60:40
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
The aim of the course is to acquaint students with current trends in marketing, including through concrete examples from domestic and foreign economic practice in interconnection for management and business. The graduate of the course is able to identify the most suitable of them
for the needs of their implementation in marketing practice, while respecting the conditions of the Slovak
market environment. At the same time, students will be given the opportunity to apply them through own projects focused primarily on digital marketing.

Class syllabus:
1. Evolution of marketing thinking, trends and approaches in marketing. Holistic marketing.
2. The impact of new approaches and technologies on partially functional marketing strategies.
3. The importance of information and marketing research in marketing management. Segmentation market and one-to-one marketing.
4. Changes in customer behavior. Building and managing customer relationships.
5. Franchising.
6. Sponsorship, fundraising and crowdfunding.
7. Marketing communication and media planning.
8. Self marketing.
9. Celebrity and influencer marketing.
10. Marketing on social networks.
11. Business and marketing in the online environment.

12. Proximity marketing, mobile marketing and m-commerce.
13. Product placement.

Recommended literature:

[1] BARKER, M. – BAKER, D. – BORMANN, N. – NEHER, K.: Social Media Marketing. A Strategic Approach. South-Western, Cengage Learning, 2013. ISBN 978-1-133-58927-3
[2] BERGER, J.: Jak stvořit pecku na trhu. Brno: Vydavateľstvo Jota, 2013. ISBN: 9788074623318
[3] CATMULL, E. – WALLACE, A.: Creativity, Inc.: Overcoming the Unseen Forces That Stand in the Way of True Inspiration. New York: Random House, 2014. ISBN 978-0812993011
[4] FREY, P.: Marketingová komunikace. Nové trendy 3.0. Praha: Management Press, 2018.
[5] GODIN, S.: Permission Marketing: Turning Strangers Into Friends & Friends Into Customers. New York: Simon & Schuster, 1999. ISBN 978-0684856360
[6] HANDLEY, A.: Everybody Writes: Your Go-To Guide to Creating Ridiculously Good Content. New York: Wiley, 2014. ISBN: 978-1-118-90555-5
[7] HESKOVÁ, M. – ŠTARCHOŇ, P.: Marketingová komunikace a moderní trendy v marketing. Praha: Oeconomia, 2009. ISBN 978-80-245-1520-5
[8] KOTLER, P. – KARTAJAYA, H. – SETIAWAN, I.: Marketing 4.0: Moving from Traditional to Digital. Wiley, 2016. ISBN: 978-1-119-34120-8
[9] KOTLER, P. – KELLER, K. L. – BRADY, M. – GOODMAN, M. – HANSEN, T.: Marketing Management. 2nd edition. Harlow: Pearson Education Limited, 2012. ISBN 978-0-273-7461-3
[10] LEHU, J. M.: Branded Entertainment: Product Placement & Brand Strategy in the Entertainment Business. London: Kogan Page, 2009. ISBN 978-0749453374
Marketing Science and Inspirations, Trend, Stratégie a ďalšie vybrané zdroje.

Languages necessary to complete the course:

Notes:

Past grade distribution

Total number of evaluated students: 0

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

Lecturers: prof. Mgr. Peter Štarchoň, PhD.

Last change: 03.02.2023

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-345/00	Money and Banking

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

Number of credits: 5

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: active participation during the classes, preparing and presentation of seminar work, midterm test
Examination: written exam with the possibility of an answer
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
The student will get acquainted with the nature, functions and forms of money, as well as with the basics, goals and instruments of monetary policy, tasks and goals of the financial market and forms of the banking system in Slovakia and abroad. After completing the course, the student will be able to integrate Slovakia and the Slovak banking system into the European and global structure and economy, learn the diversity of central and commercial banks, distinguish individual banking products and market laws, as well as unconventional banking markets (Asian markets, closed economies, specifics Islamic banking, crypto-assets markets) and their products.

Class syllabus:
Money and money circulation. Currency. Monetary policy. Financial system. Historical cross-section of banking in Slovakia and worldwide. Specialized non - bank institutions. The position and competence of the central bank. Regulation of the banking sector. Position and main activities of commercial banks. Banking products and their specifics. Connections of the banking market with other components of the developed and developing economy. Specifics of the Eurozone and the European System of Central Banks. Bank marketing. Conventional and unconventional banking markets and systems. Crypto-assets. Banking sector and sustainability.

Recommended literature:
Majerčáková Daniela: Peniaze a bankovníctvo, Wolters Kluwer, 2018
Hosp Julian: Cryptocurrencies. Julian Hosp Coaching LTD, 2017
Banking Act no. 483/2001 as amended
Natioanl Bank of Slovakia Act no. 566/1992 as amended
Annual reports of Central Banks

Biatec - mountly journal of Central Bank of Slovakia

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 553

A	B	C	D	E	FX
15,55	21,52	23,51	20,43	17,9	1,08

Lecturers: doc. PhDr. Daniela Majerčáková, PhD., MBA, Mgr. Alexandra Mittelman, PhD., MBA

Last change: 15.03.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-316/22	Nonlinear Optimization

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

Type, volume, methods and workload of the student - additional information
2/2

Number of credits: 5

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI.KMANM/1-MMN-255/00 - Linear Programming and FMFI.KAG/1-MMN-160/22 - Linear Algebra and Geometry (2)

Antirequisites: FMFI.KMANM/1-MMN-316/12

Course requirements:
Evaluation during the semester: written test - solving optimization problems, homework
Exam: Written exam
Scale of assessment (preliminary/final): 70/30, Details: Homework 40, midterm 30, final exam 30

Learning outcomes:
Students get practical knowledge in the field of minimization of nonlinear functions.

Class syllabus:
Examples of nonlinear optimization problems in one and more dimensions and an introduction to minimization methods. Convex sets and convex optimization. Numerical implementation of minimization of a function of several variables. Euler's condition for the extremum of a functional, numerical extremalization of a functional.

Recommended literature:
Nonlinear programming / Dimitri P. Bertsekas. Belmont : Athena Scientific, 1999
Convex optimization / Stephen Boyd, Lieven Vandenberghe. Cambridge : Cambridge University Press, 2004

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 192					
A	B	C	D	E	FX
32,81	15,63	12,5	17,19	19,79	2,08
Lecturers: doc. RNDr. Michal Demetrian, PhD.					
Last change: 21.01.2025					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-240/00	Numerical Mathematics (1)

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

Number of credits: 5

Recommended semester: 4.

Educational level: I., II.

Prerequisites: FMFI.KMANM/1-MAT-150/00 - Mathematical Analysis (2) or FMFI.KMANM/1-INF-150/22 - Mathematical Analysis (2) or FMFI.KAMŠ/1-DAV-102/20 - Calculus (1)

Course requirements:
Preliminary assessment: 2 written tests 10 points each, individual work 10 points
Final examination: written exam for 50 points and oral exam for 20 points
Indicative assessment scale: A 88%, B 78%, C 68%, D 58%, E 48%
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
After completing the course, students will be able to solve numerical mathematics problems from mathematical analysis, algebra, applied mathematics and practice using computers and available software.

Class syllabus:
Position of numerical mathematics in solving of real problems. Concept of stability. Errors and computational arithmetic. The solution of nonlinear equations. Solution of system nonlinear equations. Approximation of functions. Interpolation - Lagrange's and Newton's interpolation polynomial and their errors. Optimal selection of interpolations point. Chebyshev polynomials. Linear and cubic splines. The least square method. Numerical differentiation. Numerical quadrature.
The solution of simultaneous linear equations.

Recommended literature:
Lars Eldén, Linde Wittmeyer-Koch: Numerical analysis An Introduction ACADEMIC Press, INC, San Diego, 1990.
J. Babušíková, M. Slodička, J. Weisz : Numerická matematika , UK Bratislava, 1999 (skriptá).
S. Míka: Numerické metody algebry, SNTL Praha 1982.
P. Přikryl: Numerické metody matematické analýzy, SNTL Praha 1985.
A. Ralston: A first course in numerical analysis, New York, 1965.
R. L.Burden, J. D. Faires: Numerical Analysis, Cengage Learning, 2010.

Languages necessary to complete the course:

Slovak and English

Notes:

Past grade distribution
Total number of evaluated students: 1025

A	B	C	D	E	FX
19,02	21,85	21,56	15,61	18,83	3,12

Lecturers: Mgr. Jela Babušíková, PhD., RNDr. Patrik Mihala, PhD.

Last change: 21.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-780/00	Numerical Mathematics (2)

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

Number of credits: 5

Recommended semester: 5.

Educational level: I.

Prerequisites: FMFI.KMANM/1-MAT-240/00 - Numerical Mathematics (1)

Course requirements:
Continuous assessment: individual work, test
Exam: Written and oral test
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
After completing this course, students are able to numerically solve more specific mathematics problems.

Class syllabus:
Polynomial interpolation and various types of cubic splines. General least square mehod - trigonometric polynomial, Chebyshev expansions. Polynomial roots - Graeff and Bairstow methods. Gauss quadrature. Approximation of eigenvalues and eigenvectors.

Recommended literature:
Lars Eldén, Linde Wittmeyer-Koch: Numerical analysis An Introduction ACADEMIC Press, INC, San Diego, 1990.
Jela Babušíková, Marián Slodička, Juraj Weisz: Numerické metódy, Bratislava : Univerzita Komenského, 2000
Stanislav Míka: Numerické metody algebry, Praha : Státní nakladatelství technické literatury, 1985
Petr Přikryl: Numerické metody matematické analýzy, Praha : Státní nakladatelství technické literatury, 1985
R. L.Burden, J. D. Faires: Numerical Analysis, Cengage Learning, 2010.
A. Ralston: A first course in numerical analysis, New York, 1965.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 698					
A	B	C	D	E	FX
17,48	24,93	20,92	20,77	14,76	1,15
Lecturers: Mgr. Jela Babušíková, PhD., Dr. Hana Šmitala Mizerová					
Last change: 21.06.2022					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-241/22	Online business - case studies

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: 3

Recommended semester: 3., 5.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 63

A	B	C	D	E	FX
77,78	11,11	4,76	1,59	1,59	3,17

Lecturers: Ing. Jaroslav Vojtechovský, PhD.

Last change:

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-FM.KSP/1-MMN-385/22	Operations Management and Logistics

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

Number of credits: 5

Recommended semester: 6.

Educational level: I.

Prerequisites:

Course requirements:
The evaluation consists of three parts: (1) assignments during the semester 30 %, (2) test during the semester 20 %, (3) final exam 50 %. The overall evaluation is in accordance with the faculty evaluation system: A = 91-100 % excellent, B = 81-90 % very good, C = 73-80 % good, D = 66-72 % satisfactory, E = 65-60 % sufficient, FX = 0-59 %, insufficient.
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
The course provides students of the bachelor's level of study with knowledge in the field of production system management and material flow management, both in manufacturing companies and in service organizations. After successful completion of the course student will be able to:
• Understand the importance and functions of operations management and logistics and explain the basic managerial terms and processes as well as the essence of an efficient production system, also in the context of the current Industry 4.0 concept.
• Apply a systematic and professional approach to improving productivity.
• Understand the functionality and roles of software systems for production and logistics planning and control.
• Understand the core concepts of digital manufacturing and digital twins in production systems.
• Recognize the importance and apply the principles of sustainable manufacturing.
• Understand the principles of sourcing, procurement and purchasing in logistics.
• Analyse, plan, and manage inventory and warehouse systems.
• Know the different freight transportation systems and their fields of application.
• Assess the possibilities of using information and communication technologies in logistics.

Class syllabus:
1. Characteristics of operations management and production system
2. Productivity in operations management
3. Production planning and control with the use of software support
4. Digital production system and digital twin
5. Sustainable production system and circular supply chain

6. Logistics and supply chain management
7. Procurement and purchasing
8. Inventory management
9. Warehousing and warehouse management
10. Logistics transportation systems

Recommended literature:

Basic literature:
[1] FEKETE, Milan and HUĽVEJ, Jaroslav. Operačný manažment a logistika. Bratislava: Kartprint, 2018. ISBN 978-80-89553-59-4.
[2] BURGHART, Stephanie and FEKETE, Milan. Risk management of procurement of the German medium-sized industrial companies with the focus on security of supply. In: KRYVINSKA, Natalia a PONISZEWSKA-MARAŃDA, Aneta (ed.). Developments in information and knowledge management for business applications. Cham: Springer, 2022, pp. 321-359. ISBN 978-3-030-77915-3. https://doi.org/10.1007/978-3-030-77916-0_13.
[3] COLLIER, David A. and EVANS, James R. Operations and supply chain management. 3rd ed. Boston, MA: Cengage Learning, 2024. ISBN 978-0-357-90164-9.
[4] GUPTA, Sunil, IYER, Ravi S. and KUMAR, Sanjeev. Digital twins: Advancements in theory, implementation, and applications. Cham: Springer, 2025. ISBN 978-3-031-76564-3. https://doi.org/10.1007/978-3-031-76564-3.
[5] BHAT K. Shridhara and RAO, Sowmya R. Production and materials management. Mumbai: Himalaya Publishing House, 2024. ISBN 978-93-5273-270-8.
[6] CHRISTOPHER, Martin. Logistics and supply chain management. 6th ed. Harlow: Pearson, 2023. ISBN 978-1-292-41619-9.
[7] Teaching materials distributed during the semester in MS Teams.
Additional literature:
[8] NUNES, Breno; BATISTA, Luciano; MASI, Donato and BENNETT, David. Sustainable operations management: key practices and cases. London: Routledge, 2023. ISBN 978-1-003-00937-5. https://doi.org/10.4324/9781003009375.
[9] RATHI, Rajeev, GARZA-REYES, Jose, KASWAN, Mahender Singh and SINGH, Mahipal (eds.). Lean six sigma 4.0 for operational excellence under the Industry 4.0 transformation. Boca Raton: CRC Press, 2024. ISBN 978-1- 003- 38160-0. https://doi.org/10.1201/9781003381600.
[10] PARIHAR, Rityuj Singh and JAIN, Naveen (eds.). Green manufacturing for Industry 4.0. New York: Routledge, 2024. ISBN 978-1-003-43968-4. https://doi.org/10.4324/9781003439684.
[11] SILVA, Francisco J. G., PEREIRA, António B. and CAMPILHO, Raul D. S. G. (eds.). Flexible automation and intelligent manufacturing: Establishing bridges for more sustainable manufacturing systems. Cham: Springer, 2024. ISBN 978-3-031-38241-3. https://doi.org/10.1007/978-3-031-38241-3.
The homepage of the FMCU library is: https://www.fm.uniba.sk/pracoviska/kniznica-fm-uk/. On this address students can find various bibliography sources. Students can also use other relevant websites like Google Scholar https://scholar.google.com/ which is also recommended.

Languages necessary to complete the course:
Slovak, English

Notes:
The course is provided only in the summer semester. Code of the course in MS Teams: iep8obl.

Past grade distribution Total number of evaluated students: 517					
A	B	C	D	E	FX
52,61	35,2	10,64	1,35	0,19	0,0
Lecturers: doc. Ing. Milan Fekete, PhD., Ing. Jaroslav Hul'vej, PhD.					
Last change: 19.02.2026					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-261/10	Ordinary Differential Equations

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

Number of credits: 5

Recommended semester: 4.

Educational level: I., II.

Prerequisites: FMFI.KMANM/1-MAT-150/00 - Mathematical Analysis (2) or FMFI.KMANM/1-INF-150/22 - Mathematical Analysis (2)

Course requirements:
interim and final exam:
continuous examination: tests(45%); final exam: written test(35%) and oral examination(20%)
Grades:
100-91% (A); 90-81% (B); 80-71% (C); 70-61% (D); 60-51% (E), 50-0% (Fx)
Scale of assessment (preliminary/final): 45/55

Learning outcomes:
The graduate of the course will know the importance of differential equations for applications, the creation of mathematical models, gain skills in solving differential equations and acquire basic knowledge from the introduction to the theory of ordinary differential equations.

Class syllabus:
The notion of the differential equation, solution and initial value problem. The creation of mathematical models, methods of integration. Linear n-th order differential equations. The existence and uniqueness of solutions (the Picard´s theorem). Applications in natural and economic sciences.

Recommended literature:
1. Greguš, M., Švec, M., Šeda, V.: Obyčajné diferenciálne rovnice, Bratislava, Alfa, 1985.
2. Kluvánek, I., Mišík, L., Švec, M.: Matematika II, SVTL Bratislava, 1961.
3. Bock, I., Marko, Ľ. : Diferenciálne rovnice, skriptá, FEI STU, 1993.
4. D. K. Arrowamith, C. M. Place: Ordinary Diferrential Equations. A Qualitative Approach with Applications, Chapman and Hall, London, New York 1982.
5. E. A. Coddington, N. Levinson: Theory of Ordinary Differential Equations, McGraw-Hill Book Company, Inc., New York, Toronto, London 1955.

Languages necessary to complete the course:
slovak

Notes:					
Past grade distribution Total number of evaluated students: 442					
A	B	C	D	E	FX
12,44	6,33	14,48	21,72	37,56	7,47
Lecturers: RNDr. František Jaroš, PhD., Mgr. Iryna Zabaikina, PhD.					
Last change: 21.06.2022					
Approved by: doc. RNDr. Michal Demetrian, 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., 4., 6.

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

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 202

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

Lecturers: Mgr. Xenia Daniela Poslon, PhD.

Last change: 06.09.2023

Approved by: doc. RNDr. Michal Demetrian, 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., 3., 5.

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

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 202

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

Lecturers: Mgr. Xenia Daniela Poslon, PhD.

Last change: 06.09.2023

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI-FM.KMn/1-MMN-240/22	Personnel Management

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

Number of credits: 5

Recommended semester: 4.

Educational level: I.

Prerequisites:

Course requirements:
Assignments during the semester:
Case study (team assignment) - 15%
Midterm test - 15%
Final test - 15%
In-class activities - 15%
Oral exam in the exam period: 40%
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
The aim of this course is to familiarize students with the major functions of HR management (e.g. job analysis, recruitment and selection, training and development, career management, compensation, etc.) and their relations to other fields of management as well as to explore the link between business strategy and individual HR functions. Students develop a basic understanding of the implementation of individual HR functions from both employer and employee points of view.

Class syllabus:
The role of HR management in the organization.
HR planning and job analysis.
Employee recruitment and selection.
Performance management and performance appraisal.
Employee training, development and career.
Employee compensation and motivation.
Employee and labor relations.
International HRM.

Recommended literature:
Bajzíková, Ľ. et al. 2013. Manažment ľudských zdrojov. Bratislava: Univerzita Komenského v Bratislave.

Carbery, R., Cross, C. 2013. Human Resource Management – A Concise Introduction. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.
Milkovich T., Boudreau J. 1996. Human Resource Management. Boston: Richard Irwin, 8th edition.
Koubek J. 2007. Řizení lidských zdroju. Praha: Management press.
Journal of Human Resource Management. Bratislava: Comenius University, Faculty of Management. ISSN 2453-7683.
Selected case studies.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 531

A	B	C	D	E	FX
34,09	30,32	17,51	9,98	8,1	0,0

Lecturers: Mgr. Michaela Poláková, PhD., Mgr. Juliet Horváthová Suleimanová, PhD., Ing. Veronika Vojtilová, PhD.

Last change: 06.02.2023

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-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: 0

Recommended semester: 1.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Orientation in the history of the selected sports discipline, mastering the basic principles of compensation of mostly mental burdens of the individual. Creating a positive, lasting relationship to physical education and sports in the sense of calocagation. Mastering the demands for the development of motor abilities, skills, proper technique of performing individual movements in individual sports, individual game activities in collective sports games.

Class syllabus:
Introduction to the basic history of the selected sport, with the basic principles of compensation of one-sided psychological burden of the individual's body. Development of basic motor skills with a stop to all kinds of endurance, coordination, increasing the level of joint mobility. Training of individual game activities in collective sports games. In individual sports disciplines, practice of basic techniques of individual elements.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 7493

A	B	C	D	E	FX
92,81	1,52	0,23	0,0	0,08	5,37

Lecturers: Mgr. Ladislav Mókus, PaedDr. Dana Mašlejová, 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: 16.06.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-120/22	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: 1

Recommended semester: 2.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Addressing a positive and lasting relationship with physical education and sport by understanding the importance of physical development and maintaining its optimal level throughout life. The use of strength and other motor skills to more rationally manage the game activities of the individual, while improving the acquisition of more complex elements of technology. In everyday life in providing basic necessities.

Class syllabus:
Completing a positive lasting relationship to physical education and sport. Development of motor skills with a focus on the development of strength, with an emphasis on dynamic strength and endurance in strength. In collective sports games, improving individual game activities, practicing basic game combinations, playing with modified rules, tasked games. In individual sports disciplines, the development of motor abilities and skills necessary for the acquisition of more complex elements of lower difficulty techniques.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 5850

A	B	C	D	E	FX
95,61	1,5	0,14	0,09	0,05	2,62

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

Mgr. Branislav Nedbálek, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová
Last change: 15.03.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-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.

Educational level: I., I.II.

Prerequisites:

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

Learning outcomes:

Class syllabus:
To practise game combinations, tactical - mechanical elements in basketball, volleyball, soccer, floorball, ice hockey, badminton, competition rules in the sports specialization.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 3440

A	B	C	D	E	FX
98,14	0,44	0,09	0,03	0,0	1,31

Lecturers: Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, 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: 16.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-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.

Educational level: I., I.II.

Prerequisites:

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

Learning outcomes:

Class syllabus:
Preparation for sport championships of the Faculty in the chosen sport at modified rules. The selection of talented students into the teams of the University and Faculty leagues and other faculty sport events.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 2957

A	B	C	D	E	FX
97,94	0,17	0,1	0,03	0,0	1,76

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

Last change: 15.03.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-310/00	Physical Education and Sport (5)

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: 5.

Educational level: I., I.II.

Prerequisites:

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

Learning outcomes:

Class syllabus:
Preparation and participation of individuals and teams in the system of university sport competitions and sport events.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 2264

A	B	C	D	E	FX
98,63	0,35	0,09	0,0	0,0	0,93

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

Last change: 15.03.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-320/22	Physical Education and Sport (6)

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: 1

Recommended semester: 6.

Educational level: I., I.II.

Prerequisites:

Antirequisites: FMFI.KTV/1-MXX-320/00

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

Learning outcomes:

Class syllabus:
Using the communication in the physical education and sport and organizing the sport championships to achieve expressive motion of the sport and health in a valuable orientation the students.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 205

A	B	C	D	E	FX
94,63	0,49	0,49	0,0	0,0	4,39

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

Last change: 15.03.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MMN-347/22	Practice

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

Number of credits: 3

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements:
Completion of an internship in a business entity or other relevant pre-approved entity or organization. Subsequent elaboration and submission of a report on practice with a description of the scope of work, contact to the responsible person together with a confirmation of practice. Presentation of the acquired skills and practical knowledge connected with the previous study in the field. Length of the practice is min. 6 weeks.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student will gain the opportunity to evaluate the acquired knowledge and skills in real practice from the perspective of the manager at various levels of management directly in practice in a real work environment. By completing this course, the student will become more adaptable in the labor market directly in the real work environment of his field of study.

Class syllabus:
At the beginning of the semester, the student chooses from the possibilities of internships with specific employers, offering the possibility of internships related to the study program the Managerial Mathematics. Or the student will find the subject for practice independently with the condition of approval by the guarantor of the study program. The internship and its content should correspond with the student's field of study to such an extent that it is possible to use the acquired knowledge and skills not only to enrich the study, but also in the diploma thesis and to integrate into daily working life.

Recommended literature:
Individual depend on the students need

Languages necessary to complete the course:
Slovak, English (or another language depending on the student's language skills and preferences)

Notes:

The internship certificate has a uniform form available to every student and employer providing the opportunity for internship students.

Past grade distribution
Total number of evaluated students: 56

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

Lecturers: doc. PhDr. Daniela Majerčáková, PhD., MBA

Last change: 15.03.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-MAT-281/00	Probability and Statistics (1)

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

Number of credits: 4

Recommended semester: 3.

Educational level: I.

Prerequisites: (FMFI.KMANM/1-MAT-150/00 - Mathematical Analysis (2) or FMFI.KAMŠ/1-EFM-130/00 - Mathematical Analysis (2)) and (FMFI.KAG/1-MAT-120/15 - Linear Algebra and Geometry (1) or FMFI.KAG/1-MMN-120/22 - Linear Algebra and Geometry (1) or FMFI.KAG/1-EFM-121/15 - Linear Algebra and Geometry (1))

Course requirements:
Preliminary semester evaluation: a test
Examination: written examination
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
After completing the course the student will be able to use classical probability models, axiomatic approach to the definition of probability. He will master one dimensional discrete and continuous random variables. He will be given an introduction to selected statistical procedures: point and interval estimates of parameters sampling normal distribution.

Class syllabus:
Probability space. Classical probability models. Random variable and distribution function. Elementary discrete and continuous distributions, expectation and variance. Independence and correlation. Normal distribution and the central limit theorem. Random sample, sample mean, sample variance. Sampling normal distribution. Estimation of parameters, maximal likelihood, confidence intervals for the mean of a normal distribution.

Recommended literature:
Janková, K., Pázman, A.: Pravdepodobnosť a štatistika, Vydavateľstvo UK 2011
Harman, R., Honschová, E., Somorčík, J.: Zbierka úloh zo základov teórie pravdepodobnosti, Paci Bratislava 2009
G.R.Grimmett, D. Stirzaker: Probability and Random Processes. Oxford University Press 2001

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 1626					
A	B	C	D	E	FX
17,59	12,36	17,77	21,89	23,8	6,58
Lecturers: doc. RNDr. Katarína Janková, CSc., Mgr. Erika Lejtrich, Mgr. Adrián Hodúr					
Last change: 09.03.2022					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-MAT-282/00	Probability and Statistics (2)

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

Number of credits: 4

Recommended semester: 4.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-281/00 - Probability and Statistics (1)

Course requirements:
Preliminary assessment: test
Examination: written examination
Approximate final assessment: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
After completing the course the student will master multivariate discrete and continuous distributions. He will be able to calculate distributions of sums, products and ratios of independent random variables. He will know the technique of characteristic functions and will be able to apply it to the multidimensional normal distribution. The knowledge of probability methods will be applied to selected statistical problems of parameter estimation and hypotheses testing.

Class syllabus:
Multiple random variables, their distribution and characteristics. Elementary introduction to Lebesgue integral. Marginal and conditional distributions and densities. Independence, sums of independent random variables. Characteristic functions and their applications. Convergence of sequences of random variables, central limit theorems and weak law of large numbers. Statistical inference: estimation of parameters, maximal likelihood estimates, hypothesis testing. Neyman Pearson lemma. Regression models: least squares and maximal likelihood estimation of parameters. Goodness of fit tests.

Recommended literature:
Janková, K., Pázman, A.: Pravdepodobnosť a štatistika, Vydavateľstvo UK 2011
K. Zvára, J. Štěpán: Pravděpodobnost a matematická statistika, Matfzypress 1997
Harman, R., Honschová, E., Somorčík, J.: Zbierka úloh zo základov teórie pravdepodobnosti, Paci Bratislava 2009
G.R.Grimmett, D. Stirzaker: Probability and Random Processes. Oxford University Press 2001

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1502

A	B	C	D	E	FX
18,44	10,45	15,31	19,91	27,63	8,26

Lecturers: doc. RNDr. Katarína Janková, CSc., Mgr. Erika Lejtrich, Mgr. Adrián Hodúr, Mgr. Pál Somogyi, PhD.

Last change: 09.03.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-754/16	Probability and Statistics Classes (1)

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

Number of credits: 1

Recommended semester: 3.

Educational level: I.

Prerequisites:

Course requirements:
Preliminary evaluation: tests.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will be able to solve the problems of one-dimensional discrete and continuous random variables. Furthermore, students will be able to solve some statistical problems.

Class syllabus:
Probability space. Classical probability models and discrete distributions. Random variable and its distribution function. Basic types of discrete and continuous random variables. Expected value and variance. Independence and correlation coefficient. Normal distribution and central limit theorem. Random sample, its mean, sample variance. Random sample from normal distribution. Point estimates of unknown parameters, maximum likelihood estimation. Confidence intervals for the mean of the normal distribution.

Recommended literature:
Pravdepodobnosť a štatistika / Katarína Janková, Andrej Pázman. Bratislava : Univerzita Komenského, 2011
Zbierka úloh zo základov teórie pravdepodobnosti / Radoslav Harman, Erika Hönschová, Ján Somorčík. Bratislava : PACI, 2009

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 521

A	B	C	D	E	FX
67,56	6,72	8,83	7,29	4,8	4,8

Lecturers: Mgr. Ján Veselý, Mgr. Erika Lejtrich, Mgr. Adrián Hodúr
Last change: 21.06.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-753/15	Probability and Statistics Classes (2)

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

Number of credits: 1

Recommended semester: 4.

Educational level: I.

Prerequisites:

Course requirements:
Preliminary evaluation: tests.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will practice working with multidimensional discrete and continuous probability distributions. They will be able to apply the acquired knowledge in solving selected statistical problems.

Class syllabus:
Random vectors and their characteristics. Marginal and conditional distributions. Characteristic functions. Multidimensional normal distribution and its properties. Convergence of the sequence of random variables. Central limit theorem, laws of large numbers. Statistical inference, parameter estimation, maximum likelihood method, statistical hypothesis testing.

Recommended literature:
Pravdepodobnosť a štatistika / Katarína Janková, Andrej Pázman. Bratislava : Univerzita Komenského, 2011
Zbierka úloh zo základov teórie pravdepodobnosti / Radoslav Harman, Erika Hönschová, Ján Somorčík. Bratislava : PACI, 2009

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 497

A	B	C	D	E	FX
67,81	11,27	6,64	6,04	3,62	4,63

Lecturers: Mgr. Erika Lejtrich, Mgr. Adrián Hodúr, Mgr. Pál Somogyi, PhD.

Last change: 21.06.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-MAT-130/22	Programming (1)

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

Number of credits: 5

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
Active work on practice lessons at which a student solve assigned tasks is required. At least 80% of completed practice lessons are need to be admitted to the final examination. During the final examination, the student solves a practical assignment on a computer and according to obtained score, he/she receives a grade: A (90%), B (80%), C (70%), D (60%), E (50%) or FX (less than 50%).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Students are able to solve problems algorithmically, to process large number of data and to communicate with the user using basic constructions and data types of programming language Python.

Class syllabus:
Expressions and variables.
Loops.
Program branching.
Subroutines and functions.
List.
Solving mathematical and geometrical problems.
User interaction.

Recommended literature:
Salanci, L.: www.salanci.sk - web page with lectures and exercises

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 1134					
A	B	C	D	E	FX
51,76	9,08	6,0	6,7	8,02	18,43
Lecturers: doc. RNDr. Ľubomír Salanci, PhD.					
Last change: 22.02.2023					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-MAT-170/22	Programming (2)

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

Number of credits: 5

Recommended semester: 2.

Educational level: I.

Prerequisites: FMFI.KDMFI/1-MAT-130/22 - Programming (1)

Recommended prerequisites:
Programming 1

Course requirements:
Active work on practice lessons at which a student solve assigned tasks is required. At least 80% of completed practice lessons are need to be admitted to the final examination. During the final examination, the student solves a practical assignment on a computer and according to obtained score, he/she receives a grade: A (90%), B (80%), C (70%), D (60%), E (50%) or FX (less than 50%).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Using object-oriented programming in the Python programming language, students are able to solve problems algorithmically, process structured data and interact with the user.

Class syllabus:
Strings.
Objects.
Many objects.
Turtle graphics.
Recursion.
Files,
Solving mathematical and geometrical problems.
User interaction.

Recommended literature:
Salanci, L.: www.salanci.sk - web page with lectures and exercises

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 1960					
A	B	C	D	E	FX
34,85	16,48	12,19	12,4	17,55	6,53
Lecturers: doc. RNDr. Ľubomír Salanci, PhD.					
Last change: 22.02.2023					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-751/13	Programming in R

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., 4., 6.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Evaluation based on: two tests (test1 40%, test 2 60%, teaching period)
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will learn to work in the R environment, program simple functions and work with data frames.

Class syllabus:
Working with envoronment and R workspaces, basic operations.
Manipulating variables, vectors, matrices and data frames.
Conditional statements and flow control. Basic programming techniques, writing scripts and functions. Working with data files, elementary statistical operations. Using graphical procedures for data visualization. Basic optimization functions. Creating documents with R markdown.

Recommended literature:
Matloff N: The art of R programming : A tour of statistical software design, San Francisco, No Starch Press (2011); Filová L: Programovanie v jazyku R, study materials (2021)

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 294

A	B	C	D	E	FX
49,32	14,29	9,52	12,24	9,52	5,1

Lecturers: Mgr. Radoslav Hurtiš, PhD., doc. Mgr. Lenka Filová, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 746

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

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 435

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

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 215

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

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 153

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

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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-IKVa-192/19	Science, Technology and Humanity: Opportunities and Risks

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: 5

Recommended semester: 2.

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

Prerequisites:

Course requirements:
Semestral evaluation: active participation
Final evaluation: essay
Weight of the final evaluation: 60%
To achieve an A, 90% is needed, for B at least 80%, for C 70%, for D, 60% and for an E, at least 50% of overall assessment.

Learning outcomes:
The students will gain awareness of the contemporary and potential future challenges posed by scientific and technological innovations and their impact on human behaviour, culture and society.

Class syllabus:
Big data: privacy, politics and power,
Internet of things, it usefulness and threats,
Assistant AI and its place in future society,
Job market and inequality,
Enhancements and human rights and the right to change self and others,
Initiatives for responsible research,
Artificial minds,
Hybridization between species and between AI and organic minds,
Future of minds and trans-humanism,
Artificial emotional intelligence,
An after human era.

Recommended literature:
- S. Russell: Human compatible. Artificial intelligence and the problem of control. Viking, 2019.
- J. Havens: Heartificial intelligence. Embracing our humanity to maximize machines. Penguin, 2016.
- P. Boddington: Towards a code of ethics for artificial intelligence. Springer, 2017.
- M. Shanahan: The technological singularity. MIT Press, 2015.

- C. MacKellar, C.: Cyborg Mind: What Brain–Computer and Mind–Cyberspace Interfaces Mean for Cyberneuroethics. Berghahn Books, 2019.
- G. Bel, J. Gemmell: Total Recall, How the e-Memory Revolution will change everything. Dutton, 2009.
- S. Zuboff: The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power. PublicAffairs, 2019.
- C. O'Neil: Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy. Crown Publishers, 2016.
- M. Tegmark: Life 3.0. Allen Lane, 2017.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 146

A	B	C	D	E	FX
40,41	21,92	16,44	6,85	4,79	9,59

Lecturers: doc. RNDr. Martin Takáč, PhD., PhDr. Ing. Tomáš Gál, PhD.

Last change: 28.02.2020

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 155

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

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 87

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

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 32

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

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Michal Demetrian, 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.

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

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 25

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

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-733/19	Software MATLAB

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.

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

Prerequisites:

Antirequisites: FMFI.KMANM/1-MAT-731/00 and FMFI.KMANM/1-MAT-732/00

Course requirements:
Continuous assessment: activity
Examination: group project, practical computer exam
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
Students will learn the basics of using MATLAB software. They will be able to use MATLAB to calculate some mathematical problems, read files or write to files, plot computed data, create complex functions for reuse and create a graphical user interface GUI for their programs.

Class syllabus:
Format and conversion of variables, vectors and matrices
Programming environment, so-called M-file
Reading from a file and protting data
Creating functions
Graphical GUI environment

Recommended literature:
MATLAB - SIMULINK I / Stefan Kozak, Slavomir Kajan. Bratislava: Slovak University of Technology, 1999 Matlab / Jela Babušíková. Bratislava: FMFI UK Library and Publishing Center, 2007
Kozák Š., Kajan S., Matlab - Simulink, 1. Slovak University of Technology in Bratislava, 1999. ISBN Dušek F., MatLab and Simulink, University of Pardubice, 2000
mathworks.com/help

Languages necessary to complete the course:
slovak

Notes:

Past grade distribution Total number of evaluated students: 150					
A	B	C	D	E	FX
22,67	14,0	13,33	12,67	19,33	18,0
Lecturers: RNDr. Patrik Mihala, PhD.					
Last change: 15.03.2022					
Approved by: doc. RNDr. Michal Demetrian, PhD.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-115/15	Sports in Nature (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.

Educational level: I., I.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 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 does not rent ski equipment.

Past grade distribution
Total number of evaluated students: 310

A	B	C	D	E	FX
99,03	0,32	0,32	0,0	0,0	0,32

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

Last change: 16.06.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-215/15	Sports in Nature (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.

Educational level: I., I.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: 298

A	B	C	D	E	FX
92,62	0,0	0,0	0,0	0,34	7,05

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký
Last change: 16.06.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-216/18	Sports in Nature (3)

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

Number of credits: 1

Recommended semester: 3.

Educational level: I., I.II.

Prerequisites:

Antirequisites: FMFI.KTV/1-UXX-151/22

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: 58

A	B	C	D	E	FX
98,28	0,0	0,0	0,0	0,0	1,72

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký
Last change: 16.06.2022
Approved by: doc. RNDr. Michal Demetrian, PhD.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-217/18	Sports in Nature (4)

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

Number of credits: 1

Recommended semester: 4.

Educational level: I., I.II.

Prerequisites:

Antirequisites: FMFI.KTV/1-UXX-152/22

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 material equipment.

Past grade distribution
Total number of evaluated students: 41

A	B	C	D	E	FX
90,24	0,0	0,0	0,0	0,0	9,76

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký
Last change: 16.06.2022
Approved by: doc. RNDr. Michal Demetrian, 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-133/18	Supplementary English 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.

Educational level: I., I.II.

Prerequisites:

Course requirements:
tests, homework
Scale of assessment (preliminary/final): 100/0 credit - ongoing evaluationMinimum 65 percent of the total points for the assigned work is needed to pass the course. Points can be awarded for attendance, completed homework tasks, and short tests assigned during the course.A 100-93 %B 92-85 %C 84-77 %D 76-70 %E 69-65 %Course prerequisites:https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/

Learning outcomes:

Class syllabus:
Texts dealing with the most important topics for FMPI majors combining grammar revision with vocabulary needed to pass the A4 English exam.

Recommended literature:
Study materials are created by the teacher and available in electronic form.
Raymond Murphy: Essential Grammar in USe, Cambridge University Press, 1998
Michael McCarthy, Felicity O'Dell: English Vocabulary in Use, Cambridge University Press, 1994

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 72

A	B	C	D	E	FX
52,78	19,44	6,94	4,17	4,17	12,5

Lecturers: Mgr. Ing. Jana Kočvarová

Last change: 11.04.2024
Approved by: doc. RNDr. Michal Demetrian, 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-134/18	Supplementary English 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.

Educational level: I., I.II.

Prerequisites:

Course requirements:
tests, homework
Scale of assessment (preliminary/final): 100/0 ENcredit - ongoing evaluation Minimum 65 percent of the total points for the assigned work is needed to pass the course. Points can be awarded for attendance, completed homework tasks, and short tests assigned during the course. A 100-93 % B 92-85 % C 84-77 % D 76-70 % E 69-65 %Course prerequisites:https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/

Learning outcomes:

Class syllabus:
Texts dealing with the most important topics for FMPI majors combining grammar revision with vocabulary needed to pass the A4 English exam.

Recommended literature:
Study materials are created by the teacher and available in electronic form. Raymond Murphy: Essential Grammar in USe, Cambridge University Press, 1998 Michael McCarthy, Felicity O'Dell: English Vocabulary in Use, Cambridge University Press, 1994

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 72

A	B	C	D	E	FX
54,17	13,89	4,17	8,33	5,56	13,89

Lecturers: Mgr. Ing. Jana Kočvarová

Last change: 11.04.2024

Approved by: doc. RNDr. Michal Demetrian, PhD.