Course descriptions

TABLE OF CONTENTS

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KI+KAG/3-MDM-031/10	Advanced Linear Algebra

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: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: prof. RNDr. Pavol Zlatoš, PhD., prof. RNDr. Martin Škoviera, PhD.

Last change: 15.01.2018

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KI/3-MDM-029/10	Algebraic Theory of Graphs

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: 10

Recommended semester: 1., 2..

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 14

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Martin Škoviera, PhD., prof. RNDr. Róbert Jajcay, DrSc.

Last change: 02.06.2015

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KI/3-MDM-028/10	Algorithmics for Hard Problems

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: 10

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Rastislav Kráľovič, PhD.

Last change: 21.06.2022

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/3-MAM-014/00	Asymptotic Methods

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: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
Interim assessment during the semester has a weight of 30% (homeworks 20%, bonus exercises 10%). The two semester exam papers have a total weight of 70% (the first paper taken in the middle of the semester, the second paper taken at the end of the semester). The student must obtain at least half of the points from each semester exam paper. The final evaluation can be adjusted by an oral exam (theoretical questions, written preparation).
Grading: 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:
To give an overview of basic asymptotic methods for solving algebraic and differential problems in applied mathematics.

Class syllabus:
Algebraic equations: Iterative method. Algebraic equations: Expansion method. Singular perturbations and rescaling. Logarithmic Poincare's expansions. Convergence and asymptoticity. Asymptotic approximation of integrals. Watson's lemma. The steepest descent method. Regular perturbation problems in differential equations. Singular perturbation problems in differential equations. Method of matched asymptotic expansions. Multiple scale method. WKBJ method. Poincare-Lindstedt method. Radius of convergence and Domb-Sykes plots.

Recommended literature:
E. J. Hinch: Perturbation Methods, Cambridge University Press, 1991
J. Kevorkian, J. D. Cole: Multiple Scale and Singular Perturbation Methods, Springer, 1996

Languages necessary to complete the course:
English

Notes:

Past grade distribution Total number of evaluated students: 9	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. Peter Guba, PhD.	
Last change: 22.06.2022	
Approved by: prof. RNDr. Ján Filo, CSc.	

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/3-MAM-005/00	Biomathematics

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: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

Recommended prerequisites:
2-MAT-111 Dynamical Systems OR 2-MAT-112 Partial Differential Equations (1) OR 2-MAT-121 Partial Differential Equations (2)

Course requirements:
Continuous assessment: individual work
Exam: final exam and project
Assessment grade scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Students will become familiar with the theory and techniques used in current research in mathematical biology and in mathematical models in the natural and social sciences in general. At the same time, students try to work on a separate project in this area. They will also gain new knowledge from population models, chemical kinetics and cell biology.

Class syllabus:
Principles of mathematical modeling, modeling goals, model building, model simulations, parameter selection, non-dimensionalization, model robustness, results analysis. Biochemical kinetics, enzymatic reactions, cooperativity, quasi-stationary approximation. Epidemiological models. Dynamics on neural and other cell membranes, Hodgkin-Huxley model, Fitzhugh-Nagumo model.

Recommended literature:
A primer on mathematical models in biology / Lee A. Segel, Leah Edelstein-Keshet. Philadelphia, Pa. : Society for Industrial and Applied Mathematics, 2013
Mathematical biology : 1. : An introduction / J. D. Murray. New York : Springer, 2002
Mathematical biology : 2. : Spatial models and biomedical applications / J. D. Murray. New York : Springer, 2003
Nonlinear dynamics and chaos : with applications to physics, biology, chemistry, and engineering / Steven H. Strogatz. Cambridge : Perseus Books, 1994

Languages necessary to complete the course:	
Notes:	
Past grade distribution Total number of evaluated students: 4	
ABS	NEABS
100,0	0,0
Lecturers: doc. Mgr. Richard Kollár, PhD.	
Last change: 13.03.2022	
Approved by: prof. RNDr. Ján Filo, CSc.	

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MDM-027/10	Classic Algebraic Structures

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: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Tibor Katriňák, DrSc., doc. RNDr. Martin Mačaj, PhD.

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/3-MXX-101/15	Course of English for PhD Studies (1)

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

Number of credits: 5

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 218

A	ABS	B	C	D	E	FX	NEABS
38,53	57,34	0,46	0,0	0,0	1,83	0,0	1,83

Lecturers: PhDr. Alena Zemanová, Mgr. Simona Dobiašová, PhD., Mgr. Aneta Barnes

Last change: 13.01.2025

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/3-MXX-102/15	Course of English for PhD Studies (1)

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

Number of credits: 5

Recommended semester:

Educational level: III.

Prerequisites: FMFI.KJP/3-MXX-101/15 - Course of English for PhD Studies (1)

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 210

A	ABS	B	C	D	E	FX	NEABS
41,9	52,38	0,0	0,0	0,0	0,0	0,0	5,71

Lecturers: PhDr. Alena Zemanová, Mgr. Simona Dobiašová, PhD., Mgr. Aneta Barnes

Last change: 13.01.2025

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAG/3-MAT-215/22	**Course title:** Development of Novel Software Product Linked with PhD Project
Educational activities: **Type of activities:** **Number of hours:** **per week:** **per level/semester:** **Form of the course:** on-site learning	
Number of credits: 5	
Recommended semester: 8.	
Educational level: III.	
Prerequisites:	
Course requirements:	
Learning outcomes:	
Class syllabus:	
Recommended literature:	
Languages necessary to complete the course:	
Notes:	
Past grade distribution Total number of evaluated students: 0	

ABS	NEABS
0,0	0,0

Lecturers:
Last change:
Approved by: prof. RNDr. Ján Filo, CSc.

STATE EXAM DESCRIPTION

Academic year: 2024/2025	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAG/3-MAT-990/22	**Course title:** Dissertation Thesis Defense
Number of credits: 30	
Educational level: III.	
State exam syllabus:	
Last change:	
Approved by: prof. RNDr. Ján Filo, CSc.	

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/3-MMA-022/15	Dynamical Systems and Bifurcation 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: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Recommended prerequisites:
(1-MAT-801 Topology or 1-MAT-150 Mathematical Analysis (2)) and 1-MAT-310 Ordinary Differential Equations (1)

Course requirements:
Exam: oral and written exam
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Absolvent will gain a good foundation in the theory of dynamical systems and the theory of bifurcations, which he will be able to apply in solving specific problems in the field of natural and technical sciences.

Class syllabus:
Generic characterization of singular points and periodic trajectories of dynamical systems. Invariant manifolds. Reduction to the central manifold. Calculation of normal forms. Single and multiparametric bifurcations close to singular points and periodic trajectories. Homoclinic trajectories and Melnikov functions. Introduction to chaos theory.

Recommended literature:
M. Medveď: Dynamické systémy, Veda, 1988.
M. Medveď: Fundamentals of dynamical systems and bifurcation theory, Philadelphia, Adam Hilger, 1992.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: prof. RNDr. Michal Fečkan, DrSc., RNDr. Michal Pospíšil, PhD.
Last change: 15.03.2022
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KI/3-MDM-023/10	Enumeration of Discrete Structures

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: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: doc. RNDr. Eduard Toman, CSc.

Last change: 02.06.2015

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/3-MNA-005/15	Finite Element Methods

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: 10

Recommended semester:

Educational level: III.

Prerequisites:

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

Learning outcomes:
Acquire methods and practices for the implementation of modern computational procedures.

Class syllabus:
Galerkin method, interpolation theory in H-spaces 1D and 2D. Finite element method error estimation. Bases in specific spaces. The first Strang's lemma, nonconformal elements, the second Strang's lemma, the Maltigrid method, algebraic solution, solution of evolutionary problems by the finite element method.

Recommended literature:
Metóda konečných prvkov / Marián Slodička. Bratislava : Fakulta matematiky, fyziky a informatiky UK, 2001

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: prof. RNDr. Ján Filo, CSc., Dr. Hana Šmitala Mizerová

Last change: 16.03.2022

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/3-MMA-021/15	Functional Differential Equations

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: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:
Students learn the basics of the theory of differential equations with delayed arguments and functional differential equations.

Class syllabus:
1. Initial value problem and the method of steps.
2. Existence and uniqueness of solutions of systems with bounded delays.
3. Linear delay differential systems. Variation of parameters.
4. Lyapunov method for uniform stability. Asymptotic stability.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Jaroslav Jaroš, CSc.

Last change: 15.03.2022

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

<table>
<tr><td colspan="2">Academic year: 2024/2025</td></tr>
<tr><td colspan="2">University: Comenius University Bratislava</td></tr>
<tr><td colspan="2">Faculty: Faculty of Mathematics, Physics and Informatics</td></tr>
<tr><td>Course ID:
FMFI.KI/3-MDM-030/10</td><td>Course title:
Graph Theory Methods in Computer Science</td></tr>
<tr><td colspan="2">Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 per level/semester: 26
Form of the course: on-site learning</td></tr>
<tr><td colspan="2">Number of credits: 10</td></tr>
<tr><td colspan="2">Recommended semester:</td></tr>
<tr><td colspan="2">Educational level: III.</td></tr>
<tr><td colspan="2">Prerequisites:</td></tr>
<tr><td colspan="2">Course requirements:
Exam: Oral
Scale of assessment (preliminary/final): 0/100</td></tr>
<tr><td colspan="2">Learning outcomes:</td></tr>
<tr><td colspan="2">Class syllabus:</td></tr>
<tr><td colspan="2">Recommended literature:</td></tr>
<tr><td colspan="2">Languages necessary to complete the course:</td></tr>
<tr><td colspan="2">Notes:</td></tr>
<tr><td colspan="2">Past grade distribution
Total number of evaluated students: 0</td></tr>
<tr><td>ABS</td><td>NEABS</td></tr>
<tr><td>0,0</td><td>0,0</td></tr>
<tr><td colspan="2">Lecturers: prof. RNDr. Rastislav Kráľovič, PhD.</td></tr>
<tr><td colspan="2">Last change: 21.06.2022</td></tr>
<tr><td colspan="2">Approved by: prof. RNDr. Ján Filo, CSc.</td></tr>
</table>

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-809/22	Guidance of a Final Thesis or of a Project for the Students´ Conference

Educational activities:
Type of activities: other
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-101/22	Individual Study of Science and Research Resources (1)

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-102/22	Individual Study of Science and Research Resources (2)

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-103/22	Individual Study of Science and Research Resources (3)

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-104/22	Individual Study of Science and Research Resources (4)

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-105/22	Individual Study of Science and Research Resources (5)

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 5.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-106/22	Individual Study of Science and Research Resources (6)

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 6.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-107/22	Individual Study of Science and Research Resources (7)

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester: 7.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 7

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

<table>
<tr><td colspan="2">Academic year: 2024/2025</td></tr>
<tr><td colspan="2">University: Comenius University Bratislava</td></tr>
<tr><td colspan="2">Faculty: Faculty of Mathematics, Physics and Informatics</td></tr>
<tr><td>Course ID:
FMFI.KAG/3-MAT-214/22</td><td>Course title:
Introduction of Novel Experimental Method Linked with PhD Project</td></tr>
<tr><td colspan="2">Educational activities:
Type of activities:
Number of hours:
per week: per level/semester:
Form of the course: on-site learning</td></tr>
<tr><td colspan="2">Number of credits: 5</td></tr>
<tr><td colspan="2">Recommended semester: 8.</td></tr>
<tr><td colspan="2">Educational level: III.</td></tr>
<tr><td colspan="2">Prerequisites:</td></tr>
<tr><td colspan="2">Course requirements:</td></tr>
<tr><td colspan="2">Learning outcomes:</td></tr>
<tr><td colspan="2">Class syllabus:</td></tr>
<tr><td colspan="2">Recommended literature:</td></tr>
<tr><td colspan="2">Languages necessary to complete the course:</td></tr>
<tr><td colspan="2">Notes:</td></tr>
<tr><td colspan="2">Past grade distribution
Total number of evaluated students: 0</td></tr>
<tr><td colspan="2"><table>
<tr><td>ABS</td><td>NEABS</td></tr>
<tr><td>0,0</td><td>0,0</td></tr>
</table></td></tr>
<tr><td colspan="2">Lecturers:</td></tr>
<tr><td colspan="2">Last change:</td></tr>
<tr><td colspan="2">Approved by: prof. RNDr. Ján Filo, CSc.</td></tr>
</table>

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/3-MAM-009/15	Models of Fluids Dynamics

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: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

Course requirements:
Interim assessment during the semester has a weight of 30% (homeworks 20%, bonus exercises 10%). The two semester exam papers have a total weight of 70% (the first paper taken in the middle of the semester, the second paper taken at the end of the semester). The student must obtain at least half of the points from each semester exam paper. The final evaluation can be adjusted by an oral exam (theoretical questions, written preparation).
Grading: 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:
Teach the students to derive and analyse basic equations describing fluid flow.

Class syllabus:
Equations of motion for ideal fluids. Vorticity. Irrotational flow. Vorticity equation.
Equations of motion for viscous fluids. Examples of simple viscous flows. Flows with circular streamlines.
Convection and diffusion of vorticity. Gravity waves. Dispersion and group velocity. Surface tension effects and capillary waves.
Internal gravity waves. Waves with finite amplitude. Hydraulic shocks and solitary waves. Kelvin--Helmholtz instability. Thermal convection. Centrifugal instability. Theorem on the stability of shear flow. General theorem on the stability of viscous flow. Uniqueness of steady viscous flow. Transition to turbulence.

Recommended literature:
D. J. Acheson: Elementary Fluid Dynamics, Oxford, Clarendon Press, 1990
G. K. Batchelor: An Introduction to Fluid Dynamics, Cambridge University Press, 2000
P. Guba: Dynamika tekutín, skriptá, FMFI UK, 2021

Languages necessary to complete the course:
English

Notes:

Past grade distribution Total number of evaluated students: 2	
ABS	NEABS
100,0	0,0
Lecturers: doc. RNDr. Peter Guba, PhD.	
Last change: 22.06.2022	
Approved by: prof. RNDr. Ján Filo, CSc.	

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/3-MMA-023/15	Nonlinear Functional Analysis

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: 10

Recommended semester: 1.

Educational level: III.

Prerequisites:

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

Learning outcomes:
To show possible applications of nonlinear functional analysis, especially in examining the properties of solutions of differential equations.

Class syllabus:
Fundamentals of the theory of the degree of mappings, introduction to the theory of monotone operators, nonlinear boundary value problems.

Recommended literature:
Methods of nonlinear analysis : Applications to differential equations / Pavel Drábek, Jaroslav Milota. Basel : Birkhäuser, 2007
Nonlinear functional analysis and its applications : II/B: Nonlinear Monotone Operators / Eberhard Zeidler ; Translated by Author and by Leo F. Boron. New York : Springer, 1990
An introduction to nonlinear boundary value problems / Stephen R. Bernfeld, V. Lakshmikantham. New York : Academic Press, 1974

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: prof. RNDr. Michal Fečkan, DrSc.

Last change: 12.03.2022
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/3-MNA-004/00	Numerical Methods for Conservation Law

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: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:
Continuous assessment: individual work
Exam: oral
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%

Learning outcomes:
To get acquainted with the basic methods of solving hyperbolic conservation systems.

Class syllabus:
Hyperbolic systems; linear problems and their numerical methods; consistence, convergence and Lax‘s theorem, Lax Vendroffova method, nonlinear hyperbolic problems, weak and entropy solutions, conservative and entropy methods, Riemann problem and its solution, Godunov method, Roas method, nonlinear hyperbolic systems and the methods of their solutions.

Recommended literature:
Le Veque: Numerical methods for conservative law, ETH Zurich, Birkhauser-Verlag, Basel, 1992

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: prof. RNDr. Ján Filo, CSc., Dr. Hana Šmitala Mizerová

Last change: 21.06.2022

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/3-MNA-002/00	Numerical Methods for Solving ODEs

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: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
IVP: one step methods, multistep methods, stability, convergence, nonstiff and stiff problems, explicit RK-methods of higher order, implicit RK-methods, delay differential equations.
BVP:.conditioning of BVPs, initial value methods, finite difference methods, finite element methods, mesh selection, singular perturbations, functional differential equations, solving of nonlinear multipoint BVPs.

Recommended literature:
Hairer, E., Norsett, S. P., Wanner, G.: Solving Ordinary Differential Equations I Nonstiff Problems.Springer Verlag 1987
Hairer, E.,Wanner, G.: Solving Ordinary Differential Equations II Stiff and Differential – Algebraic Problems. Springer Verlag 1991
Ascher, U. M., Mattheij, R. M. M., Russell, R. D.: Numerical Solution of Boundary Value Problems for Ordinary Differential Equations. SIAM 1995
Dávid, A., Chocholatý, P.: Numerická matematika II (Okrajové úlohy pre obyčajné diferenciálne rovnice) UK Bratislava 1985

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: Dr. Hana Šmitala Mizerová

Last change: 02.06.2015
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/3-MNA-001/00	Numerical Methods of Linear Algebra

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: 10

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Direct solution's methods for systems of linear algebraic equations and their stability. Projective methods. Classical iterative methods for sparse systems and special modifications to accelerate their convergence. Methods of solution for eigenvalue problem and generalized eigenvalue problem. Last square problem.

Recommended literature:
G.H.Golub, C. F. Mc. Loan: Matrix Computations, North Oxford Academic,Oxford 1983, 1988, The John Hopkins University Press, Baltimore and London, 1996
Y. Saad: Iterative Methods for Sparse Linear Systems, SIAM, Pfiladelphia,2003

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers:

Last change: 02.06.2015

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-211/22	Obtaing the Comenius University Grant for the Young

Educational activities:
Type of activities: independent work
Number of hours:
per week: 20 **per level/semester:** 260
Form of the course: on-site learning

Number of credits: 20

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-212/22	Organisation of Science Events

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/3-MMA-028/15	Partial Differential Equations

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: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: doc. RNDr. Eugen Viszus, CSc.

Last change: 10.03.2020

Approved by: prof. RNDr. Ján Filo, CSc.

STATE EXAM DESCRIPTION

Academic year: 2024/2025	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAG/3-MAT-950/22	**Course title:** Passing Dissertation Examination
Number of credits: 20	
Educational level: III.	
State exam syllabus:	
Last change:	
Approved by: prof. RNDr. Ján Filo, CSc.	

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-213/22	PhD Students´ Mobility

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-209/22	Presentation at a Home Conference

Educational activities:
Type of activities: independent work
Number of hours:
per week: 5 **per level/semester:** 65
Form of the course: on-site learning

Number of credits: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-210/22	Presentation at an International Conference

Educational activities:
Type of activities: independent work
Number of hours:
per week: 20 **per level/semester:** 260
Form of the course: on-site learning

Number of credits: 20

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 6

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KI/3-MDM-024/22	Probabilistic Methods in Combinatorics

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: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: doc. RNDr. Eduard Toman, CSc.

Last change: 28.01.2022

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-202/22	Publication in a Reviewed Periodical or Reviewed Almanac

Educational activities:
Type of activities: independent work
Number of hours:
per week: 15 **per level/semester:** 195
Form of the course: on-site learning

Number of credits: 15

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-201/22	Publication in an A-category Periodical

Educational activities:
Type of activities: independent work
Number of hours:
per week: 30 **per level/semester:** 390
Form of the course: on-site learning

Number of credits: 30

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-207/22	Response to a Publication

Educational activities:
Type of activities: other
Number of hours:
per week: 5 **per level/semester:** 65
Form of the course: on-site learning

Number of credits: 5

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-208/22	Scientific Project Co-researcher

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG+KI/3-MDM-034/10	Selected Topics in Group 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: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Pavol Zlatoš, PhD., prof. RNDr. Martin Škoviera, PhD., prof. RNDr. Róbert Jajcay, DrSc.

Last change: 02.06.2015

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KI/3-MDM-035/15	Selected Topics in Modern Graph 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: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Martin Škoviera, PhD., doc. RNDr. Edita Mačajová, PhD.

Last change: 02.06.2015

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/3-MMA-012/22	Semigroups and Evolution Equations

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: 10

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:
Preliminary grading: The student will complete three homework assignments of 15 points.
Exam: oral
Indicative scale of assessment: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 45/55

Learning outcomes:
The students will learn the basics of the theory of C0-semigroups
and its use in the analysis of evolution partial differential equations,
primarily equations of parabolic type.

Class syllabus:
The Gauss-Weierstras semigroup, C0-semigroups and their generators, the Hille-Yosida theorem. Analytic semigroups and their generators. Generation of semigroups by elliptic operators. Powers of operators. Fractional, interpolation and extrapolation spaces, and properties of semigroups in those spaces. Existence and properties of the solution of a model nonlinear parabolic equation.

Recommended literature:
A. Pazy: Semigroups of Linear Operators and Applications to Partial Differential Equations; Springer 1983

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: prof. RNDr. Pavol Quittner, DrSc.

Last change: 19.06.2022
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-203/22	Seminar in Science (1)

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

Number of credits: 10

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Martin Škoviera, PhD., prof. RNDr. Pavol Quittner, DrSc.

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-204/22	Seminar in Science (2)

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

Number of credits: 10

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Martin Škoviera, PhD., prof. RNDr. Pavol Quittner, DrSc.

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAG/3-MAT-205/22	**Course title:** Seminar in Science (3)
Educational activities: **Type of activities:** **Number of hours:** **per week:** **per level/semester:** **Form of the course:** on-site learning	
Number of credits: 10	
Recommended semester: 6.	
Educational level: III.	
Prerequisites:	
Course requirements:	
Learning outcomes:	
Class syllabus:	
Recommended literature:	
Languages necessary to complete the course:	
Notes:	

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Martin Škoviera, PhD., prof. RNDr. Pavol Quittner, DrSc.
Last change:
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-206/22	Seminar in Science (4)

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

Number of credits: 10

Recommended semester: 8.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Martin Škoviera, PhD., prof. RNDr. Pavol Quittner, DrSc.

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-023/22	Subject of Specialisation

Educational activities:
Type of activities: independent work
Number of hours:
per week: 10 **per level/semester:** 130
Form of the course: on-site learning

Number of credits: 10

Recommended semester:

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-802/22	Teaching Practice in the Summer Semester

Educational activities:
Type of activities: other
Number of hours:
per week: 5 **per level/semester:** 65
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 2.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-804/22	Teaching Practice in the Summer Semester

Educational activities:
Type of activities: other
Number of hours:
per week: 5 **per level/semester:** 65
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 4.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-806/22	Teaching Practice in the Summer Semester

Educational activities:
Type of activities: other
Number of hours:
per week: 5 **per level/semester:** 65
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 6.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-808/22	Teaching Practice in the Summer Semester

Educational activities:
Type of activities: other
Number of hours:
per week: 5 **per level/semester:** 65
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 8.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-801/22	Teaching Practice in the Winter Semester

Educational activities:
Type of activities: other
Number of hours:
per week: 5 **per level/semester:** 65
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 3

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAG/3-MAT-803/22	**Course title:** Teaching Practice in the Winter Semester
Educational activities: **Type of activities:** other **Number of hours:** **per week:** 5 **per level/semester:** 65 **Form of the course:** on-site learning	
Number of credits: 5	
Recommended semester: 3.	
Educational level: III.	
Prerequisites:	
Course requirements:	
Learning outcomes:	
Class syllabus:	
Recommended literature:	
Languages necessary to complete the course:	
Notes:	

Past grade distribution
Total number of evaluated students: 4

ABS	NEABS
100,0	0,0

Lecturers:
Last change:
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-805/22	Teaching Practice in the Winter Semester

Educational activities:
Type of activities: other
Number of hours:
per week: 5 **per level/semester:** 65
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 5.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/3-MAT-807/22	Teaching Practice in the Winter Semester

Educational activities:
Type of activities: other
Number of hours:
per week: 5 **per level/semester:** 65
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 7.

Educational level: III.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 5

ABS	NEABS
100,0	0,0

Lecturers:

Last change:

Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KI/3-MDM-025/10	**Course title:** Topological Graph 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: 10	
Recommended semester: 1.	
Educational level: III.	
Prerequisites:	
Course requirements:	
Learning outcomes:	
Class syllabus:	
Recommended literature:	
Languages necessary to complete the course:	
Notes:	

Past grade distribution
Total number of evaluated students: 6

ABS	NEABS
100,0	0,0

Lecturers: prof. RNDr. Martin Škoviera, PhD.
Last change: 02.06.2015
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

Academic year: 2024/2025

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/3-MNA-003/00	Variational Methods of Solving of PDEs

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: 10

Recommended semester: 3.

Educational level: III.

Prerequisites:

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

Learning outcomes:
To gain theoretical basics of modern numerical methods.

Class syllabus:
Sobolev spaces, generalized solutions of boundary value elliptic problems, Lax-Milgram theorem, Ritz and Galerkin methods, Fredholm alternative, spectral theory, generalized solutions of parabolic and hyperbolic problems.

Recommended literature:
K. Rektorys: Variational Methods in Mathematics, Science and Engineering, SNTL, Praha 1974 (in Czech)
J. Nečas: Les Methodes Discrete en Theorie des Equations Elliptiques, Academia, Praha 1967
J. Wloka: Partial Differential Equations, University Press, Cambridge

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 0

ABS	NEABS
0,0	0,0

Lecturers: prof. RNDr. Michal Fečkan, DrSc.

Last change: 12.03.2022

Approved by: prof. RNDr. Ján Filo, CSc.