Course descriptions

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COURSE DESCRIPTION

University: Comenius University in Bratislava		
Faculty: Faculty of Mathematics, Physics and Informatics		
Course ID: FMFI.KAGDM/2- MAT-610/09	**Course title:** Algebraic Number Theory	
Educational activities: **Type of activities:** lecture **Number of hours:** **per week:** 2 **per level/semester:** 28 **Form of the course:** on-site learning		
Number of credits: 3		
Recommended semester: 4.		
Educational level: II.		
Prerequisites:		
Course requirements:		
Learning outcomes:		
Class syllabus:		
Recommended literature:		
Languages necessary to complete the course:		
Notes:		

Past grade distribution
 Total number of evaluated students: 10

A	B	C	D	E	FX
60,0	10,0	30,0	0,0	0,0	0,0

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-223/09	**Course title:** Algebraic Topology

Educational activities:
  Type of activities: lecture
  Number of hours:
   per week: 4 **per level/semester:** 56
  Form of the course: on-site learning

Number of credits: 6

Recommended semester: 2.

Educational level: II., III.

Prerequisites:

Course requirements:
 examination

Learning outcomes:
 Subject aim: to acquaint students with basic ideas, methods and some applications of algebraic topology.

Class syllabus:
 The problem of homeomorphy. Constructions of new topological spaces by forming quotient spaces. Attaching a cell to a topological space. Surfaces and topological manifolds. Path-connectedness. Homotopy. Fundamental group. Basic homology theory. Homology groups of spheres and their applications. Cohomology groups, cohomology ring, and applications.

Recommended literature:
 A. Hatcher, Algebraic Topology. Cambridge University Press 2002
 A. Kriegl, Algebraic Topology. Lecture Notes. University of Vienna, Vienna 2008, accessible at http://www.mat.univie.ac.at/~kriegl/Skripten/alg-top.pdf
 W. Massey, A Basic Course in Algebraic Topology. Springer-Verlag, New York 1991
 E. Spanier, Algebraic Topology. Springer-Verlag, New York 1995

Languages necessary to complete the course:
 English

Notes:

Past grade distribution
 Total number of evaluated students: 30

A	B	C	D	E	FX
50,0	30,0	10,0	6,67	3,33	0,0

Lecturers: prof. RNDr. Július Korbaš, CSc.

Last change: 10.04.2017

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAGDM/2-MAT-226/14	**Course title:** Applications of set theory

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes: Students will be able to apply more advanced set-theoretic techniques (mainly Zorn's lemma and transfinite induction) to problems from various areas of mathematics.

Class syllabus: Axiom of choice and its equivalents. Zorn lemma and its applications. Ordinals, transfinite induction and its applications. Almost disjoints systems, infinite trees, ultrafilters.

Recommended literature: Combinatorial set theory : With a gentle introduction to forcing / Lorenz J. Halbeisen. London : Springer, 2012

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 2

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

Lecturers: RNDr. Martin Sleziak, PhD.

Last change: 31.10.2016

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

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAMŠ/2-MAT-123/15	Course title: Calculus of Variations

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
    per week: 2 / 2 per level/semester: 28 / 28
  Form of the course: on-site learning

Number of credits: 6

Recommended semester: 2.

Educational level: II., III.

Prerequisites:

Antirequisites: FMFI.KAMŠ/2-MAT-123/09

Course requirements: Preliminary grading: homeworks. Exam: written and oral. Grading: A 90%, B 80%, C 70%, D 60%, E 50%. Scale of assessment (preliminary/final): 20/80

Learning outcomes: The students will learn to differentiate variational integrals and related Nemytskii mappings, they will be able to verify necessary and sufficient conditions guaranteeing the existence of global and local extrema of particular functionals, to find extrema in the case of one-dimensional integrals and find out, whether these extrema are weak or strong.

Class syllabus: Differentiability of the Nemytskii mapping, basic existence theorem for global extrema, necessary and sufficient conditions for local extrema, constrained extrema, the Euler and Jacobi equations, necessary and sufficient conditions for strong and weak extrema of one-dimensional integrals, investigation of critical points of particular functionals.

Recommended literature: B. Dacorogna: Direct methods in the calculus of variations, Springer, Berlin - Heidelberg 2008. M. Struwe: Variational methods, Springer, Berlin - Heidelberg 2008. J.L. Troutman: Variational calculus and Optimal Control, Springer, New York 1996. G. Buttazzo, M. Giaquinta, S. Hildebrandt: One-dimensional variational problems, Clarendon Press, Oxford 1998.

Languages necessary to complete the course: English

Notes:

Past grade distribution					
Total number of evaluated students: 2					
A	B	C	D	E	FX
50,0	50,0	0,0	0,0	0,0	0,0

Lecturers: prof. RNDr. Pavol Quittner, DrSc.

Last change: 28.04.2017

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-617/09	**Course title:** Category Theory (1)

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II., 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: 15

A	B	C	D	E	FX
93,33	0,0	0,0	0,0	0,0	6,67

Lecturers: doc. RNDr. Juraj Činčura, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-622/09	**Course title:** Category Theory (2)

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: II., 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: 9

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

Lecturers: doc. RNDr. Juraj Činčura, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2- MAT-232/09	**Course title:** Computer Algebra (1)

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 34

A	B	C	D	E	FX
85,29	8,82	2,94	0,0	2,94	0,0

Lecturers: doc. RNDr. Jaroslav Guričan, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-241/09	**Course title:** Computer Algebra (2)

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 38

A	B	C	D	E	FX
78,95	7,89	10,53	0,0	2,63	0,0

Lecturers: doc. RNDr. Jaroslav Guričan, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAMŠ/2-EFM-117/12	**Course title:** Convex Optimization

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 per level/semester: 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Recommended prerequisites:
 Nonlinear programming, Linear programming

Course requirements:
 Homeworks, Project presentation
 Grading A 91%, B 81%, C 71%, D 61%, E 51%
 Scale of assessment (preliminary/final): 60/40

Learning outcomes:
 Student learn the basic theory of convex analysis and convex (conic) optimization,
 basic classes of convex conic programming, and methods for solving them, they are able to use
 Matlab and CVX modeling system for solving convex problems, they are able to solve various
 practical problems and applications.

Class syllabus:
 Convex optimization problems in standard form
 Generalization of standard convex problems
 Conic convex problems (SDP, SOCP,..)
 Geometry of convex cones
 Duality theory for conic linear programs
 Applications of convex conic problems
 Conic relaxations
 Interior point methods

Recommended literature:
 1. Boyd, Vandenberghe: Convex Optimization, Cambridge Univ.Press 2004
 2. CVX: Matlab Software for Disciplined Convex Programming www.stanford.edu/~boyd/
 cvxbook
 3. Ben-Tal, Nemirovski: Lectures on Modern Convex Optimization, SIAM 2001

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution					
Total number of evaluated students: 48					
A	B	C	D	E	FX
75,0	10,42	4,17	4,17	4,17	2,08

Lecturers: doc. RNDr. Mária Trnovská, PhD.

Last change: 16.05.2018

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KI/1-INF-640/00	**Course title:** Cryptology (1)

Educational activities:
 Type of activities: lecture
 Number of hours:
  per week: 4 **per level/semester:** 56
 Form of the course: on-site learning

Number of credits: 6

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
 1. Introduction to cryptology, encryption
 2. Block cipher (design, multiple encryption, modes of operation, AES)
 3. Stream ciphers (design, properties)
 4. Public key cryptography - introduction
 5. RSA (initialization, soundness, implementation, security)
 6. Quadratic residues/non-residues (characterization, relation to factorization)
 7. Rabin public key system
 8. Discrete logarithm (Pohlig-Hellman algorithm)
 9. ElGamal system (initialization, soundness, security)
 10. Hash functions (birthday attack, MAC)
 11. Digital signatures (RSA scheme, ElGamal scheme, DSA, blind signatures)
 12. Secret sharing schemes
 13. Cryptographic protocols (Diffie-Hellman, Interlock, trusted third party)
 14. Attacks on protocols (replay attack, symmetry, protocols interaction, etc.)
 15. Practical recommendation for protocols design
 16. BAN logic (language, rules, analysis of Needham-Schroeder protocol)

Recommended literature:
 M. Stanek, Základy kryptológie, In Slovak, http://www.dcs.fmph.uniba.sk/~stanek/crypto/main2.pdf

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 153

A	B	C	D	E	FX
19,61	5,88	17,65	16,99	30,72	9,15

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-214/09	**Course title:** Differential Topology

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 1.

Educational level: II., III.

Prerequisites:

Course requirements:
examination

Learning outcomes:
Subject aim: to acquaint students with basic ideas, methods and some applications of differential topology.

Class syllabus:
A review of selected basic notions of general topology. Differentiable manifolds and differentiable maps. Tangent vector space. The differential of a differentiable map at a point. Tangent bundles. Submanifolds. Immersions and embeddings of manifolds. Inverse Function Theorem and its corollaries; transversality. Regular and critical points, regular and critical values, Sard's Theorem. Proof of the fundamental theorem of algebra.

Recommended literature:
M. Hirsch, Differential Topology. Springer-Verlag, New York 1976.
J. Milnor, Topology from the Differential Viewpoint, The Univ. Press of Virginia, Charlottesville 1965.
I. Singer, J. Thorpe, Lecture Notes on Elementary Topology and Geometry, Scott, Foresman and Co., Glenview, Illinois 1967.
F. Warner, Foundations of Differentiable Manifolds and Lie Groups. Springer-Verlag, Berlin 1983.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 29

A	B	C	D	E	FX
65,52	6,9	20,69	3,45	3,45	0,0

Lecturers: prof. RNDr. Július Korbaš, CSc., Mgr. Tibor Macko, PhD.
Last change: 10.04.2017
Approved by: prof. RNDr. Ján Filo, CSc.

STATE EXAM DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KMANM/2-MAT-991/15	**Course title:** Diploma Thesis Defense
Number of credits: 12	
Educational level: II.	
State exam syllabus:	
Last change: 02.06.2015	
Approved by: prof. RNDr. Ján Filo, CSc.	

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2- MAT-920/15	**Course title:** Diploma Thesis Seminar

Educational activities:
  Type of activities: seminar
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 4.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KMANM/2-MAT-920/11

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 9

A	B	C	D	E	FX
77,78	0,0	0,0	0,0	11,11	11,11

Lecturers: prof. RNDr. Ján Filo, CSc., doc. RNDr. Eugen Viszus, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-111/15	**Course title:** Dynamical Systems

Educational activities:
 Type of activities: lecture / practicals
 Number of hours:
  per week: 2 / 2 **per level/semester:** 28 / 28
 Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KMANM/2-MAT-111/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 11

A	B	C	D	E	FX
54,55	0,0	18,18	9,09	0,0	18,18

Lecturers: prof. RNDr. Milan Medveď, DrSc., prof. RNDr. Michal Fečkan, DrSc., RNDr. František Jaroš, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
  Type of activities: practicals
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 3.

Educational level: I., II.

Prerequisites:

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

Learning outcomes:

Class syllabus:
 The content of the course is general English.
 The language level is B2/C1 (Upper-Intermediate/Lower Advanced).

Recommended literature:
 Selection of materials from Inside Out Upper-Intermediate, Cutting Edge Upper-Intermediate,
 New English File Upper-Intermediate, British and American newspapers and journals
 Recordings: authentic and semi-authentic (source: BBC, CNN, coursebook recordings)

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 135

A	B	C	D	E	FX
58,52	18,52	9,63	2,22	1,48	9,63

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
 Type of activities: practicals
 Number of hours:
   per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 4.

Educational level: I., II.

Prerequisites:

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

Learning outcomes:

Class syllabus:
 The course is a follow-up to the Conversation Course in English (1). The content of the course is
 general English.
 The language level is B2/C1 (Upper-Intermediate/Lower Advanced).

Recommended literature:
 Selection of materials from Inside Out Upper-Intermediate, Cutting Edge Upper-Intermediate,
 New English File Upper-Intermediate, British and American newspapers and journals
 Recordings: authentic and semi-authentic (source: BBC, CNN, coursebook recordings)

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 62

A	B	C	D	E	FX
67,74	19,35	4,84	0,0	0,0	8,06

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-215/12	**Course title:** Field Theory (1)

Educational activities:
 Type of activities: lecture
 Number of hours:
  per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:
 Scale of assessment (preliminary/final): 20/80

Learning outcomes:

Class syllabus:
 Field extensions. Finite fields. Introduction to the Galois theory. Fundamental theorem of algebra.

Recommended literature:
 Birkhoff, G., MacLane, S: Prehľad modernej algebry
 Lang, S.: Algebra
 Niederreiter, H., Lidl, R.: Theory of fields
 Crandall, R., Pomerance, C.: Prime numbers, a computational perspective

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 17

A	B	C	D	E	FX
47,06	23,53	17,65	0,0	5,88	5,88

Lecturers: doc. RNDr. Martin Mačaj, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-216/12	**Course title:** Field Theory (2)

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:
 Scale of assessment (preliminary/final): 20/80

Learning outcomes:

Class syllabus:
 Generation of finite fields. Rabin-Miller and Agrawal-Kayena-Saxena test for primality. Applications in cryptography: RSA and XTR. Wedderburn's theorem.

Recommended literature:
 Birkhoff, G., MacLane, S: Prehľad modernej algebry
 Lang, S.: Algebra
 Niederreiter, H., Lidl, R.: Theory of fields
 Crandall, R., Pomerance, C.: Prime numbers, a computational perspective

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 15

A	B	C	D	E	FX
73,33	20,0	6,67	0,0	0,0	0,0

Lecturers: doc. RNDr. Martin Mačaj, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-315/12	**Course title:** Finite Difference Methods for Differential Equations

Educational activities:
  Type of activities: lecture
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 20

A	B	C	D	E	FX
55,0	0,0	20,0	10,0	15,0	0,0

Lecturers: Mgr. Peter Novotný, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-323/09	**Course title:** Finite Elements Method (1)

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 2.

Educational level: II.

Prerequisites: FMFI.KMANM/2-MAT-325/12 - Variational Methods in Differential Equations

Course requirements:

Learning outcomes:

Class syllabus:
Variational formulation for linear,elliptic boundary value problems; Ritz and Galerkin method (Lemma of Cea); construction of basis functions for finit dimensional approximation spaces; local and global variational formulation; asembling; convergence; error estimates for 1D and 2D linear interpolation.

Recommended literature:
M. Slodička: Metóda konečných prvkov; (v tlači) je v elektronickej forme dostupná
J. Kačur: Numerické metódy riešenia PDR (v elektronickej forme)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 35

A	B	C	D	E	FX
40,0	22,86	20,0	11,43	0,0	5,71

Lecturers: prof. RNDr. Jozef Kačur, DrSc., prof. RNDr. Ján Filo, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-334/10	**Course title:** Finite Elements Method (2)

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites: FMFI.KMANM/2-MAT-323/09 - Finite Elements Method (1)

Course requirements:
 Scale of assessment (preliminary/final): 30/70

Learning outcomes:

Class syllabus:
 Variational crimes; 1. and 2. Lemma of Strang; approximation of boundary conditions; nonconformal method of finite elements; Mixed finite element method; practical solution using software PLTMG; solution of stationary 2D problems in practical implementation.

Recommended literature:
 M. Slodička: Metóda konečných prvkov; (v tlači) je v elektronickej forme dostupná
 J. Kačur: Numerické metódy riešenia PDR (v elektronickej forme)

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 24

A	B	C	D	E	FX
45,83	0,0	29,17	8,33	12,5	4,17

Lecturers: prof. RNDr. Jozef Kačur, DrSc., prof. RNDr. Ján Filo, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
  Type of activities: practicals
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Course requirements:

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:
 Pravda, Pravdová: Učebnica francúzštiny pre samoukov a kurzy, SPN Bratislava 1999, ISBN 80-08-00431-2

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 374

A	B	C	D	E	FX
39,84	22,19	21,66	10,16	2,14	4,01

Lecturers: Mgr. Pavel Vilášek, Mgr. Ľubomíra Koževhubová

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

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

Educational activities:
  Type of activities: practicals
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

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

Recommended literature:
 Pravda, Pravdová: Učebnica francúzštiny pre samoukov a kurzy, SPN Bratislava 1999, ISBN 80-08-00431-2
 Blažena Srncová: Učebnica francúzštiny pre študentov Matematicko-fyzikálnej fakulty , UK 1983
 Kolektív Lingea, s.r.o.: Slovensko-francúzsky hovorník, Bratislava 2008

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 237

A	B	C	D	E	FX
34,18	27,85	21,52	11,39	2,53	2,53

Lecturers: Mgr. Pavel Vilášek, Mgr. Ľubomíra Kožehubová

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
  Type of activities: practicals
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

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

Recommended literature:
 Pravda, Pravdová: Učebnica francúzštiny pre samoukov a kurzy, SPN Bratislava 1999, ISBN 80-08-00431-2
 Blažena Srncová: Učebnica francúzštiny pre študentov Matematicko-fyzikálnej fakulty , UK 1983
 Kolektív Lingea, s.r.o.: Slovensko-francúzsky hovorník, Bratislava 2008

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 93

A	B	C	D	E	FX
33,33	30,11	23,66	7,53	1,08	4,3

Lecturers: Mgr. Pavel Vilášek, Mgr. Ľubomíra Kožehubová

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
 Type of activities: practicals
 Number of hours:
  per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

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

Recommended literature:
 Pravda, Pravdová: Učebnica francúzštiny pre samoukov a kurzy, SPN Bratislava 1999, ISBN 80-08-00431-2
 Blažena Srncová: Učebnica francúzštiny pre študentov Matematicko-fyzikálnej fakulty , UK 1983
 Kolektív Lingea, s.r.o.: Slovensko-francúzsky hovorník, Bratislava 2008
 Zarha Lahmidi: Sciences-techniques.com, ISBN 209-0331186-0, CLE international, 2005

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 63

A	B	C	D	E	FX
31,75	38,1	20,63	3,17	1,59	4,76

Lecturers: Mgr. Pavel Vilášek, Mgr. Ľubomíra Kožehubová

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAMŠ/2-MAT-115/12	**Course title:** Functional Analysis

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
    per week: 2 / 2 **per level/semester:** 28 / 28
  Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:
 Preliminary grading: homeworks.
 Exam: written and oral.
 Grading: A 90%, B 80%, C 70%, D 60%, E 50%.
 Scale of assessment (preliminary/final): 20/80

Learning outcomes:
 The students will learn to determine the spectrum of certain types of linear operators, the convergence of operators and functions in various topologies and function spaces, and perform basic operations with distributions.

Class syllabus:
 Compact operators and Fredholm's alternative, spectrum of closed, continuous, compact and self-adjoint operators, locally convex spaces and continuous linear operators in these spaces, weak topologies and compactness in weak topologies, distributions.

Recommended literature:
 W. Rudin: Functional Analysis, McGraw-Hill, New York 1973.
 K. Yosida: Functional Analysis, Springer, Berlin, Heidelberg 1980.
 A.E. Taylor: Introduction to Functional Analysis, John Wiley & Sons, New York 1958.
 A.W. Naylor & G.R. Sell: Linear operator theory in engineering and science, Holt, Rinehart & Winston, New York, 1971.

Languages necessary to complete the course:
 English

Notes:

Past grade distribution
 Total number of evaluated students: 18

A	B	C	D	E	FX
55,56	16,67	16,67	5,56	5,56	0,0

Lecturers: prof. RNDr. Pavol Quittner, DrSc.

Last change: 28.04.2017
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-211/15	**Course title:** General Topology

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 4 **per level/semester:** 56
  Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: II., III.

Prerequisites:

Antirequisites: FMFI.KAGDM/2-MAT-211/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 3

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

Lecturers: doc. RNDr. Juraj Činčura, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
  Type of activities: practicals
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

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.

Recommended literature:
 Vilášek, P.: Nemčina pre študentov FMFI, Na webovej stránke autora v elektronickej podobe.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 648

A	B	C	D	E	FX
31,94	29,17	21,3	10,03	2,93	4,63

Lecturers: Mgr. Pavel Vilášek, Mgr. Alexandra Maďarová

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
 Type of activities: practicals
 Number of hours:
  per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
 The course continues the program of German language (1). German language is taught at three levels: beginner, intermediate, advanced.

Recommended literature:
 Vilášek, P.: Nemčina pre študentov FMFI, Na webovej stránke autora v elektronickej podobe.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 408

A	B	C	D	E	FX
29,17	22,06	23,77	14,95	3,68	6,37

Lecturers: Mgr. Pavel Vilášek, Mgr. Alexandra Maďarová

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
  Type of activities: practicals
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The subject continues the program of German language (2). It provides a course of intermediate and advanced German language.

Recommended literature:
Vilášek, P.: Nemčina pre študentov FMFI, Na webovej stránke autora v elektronickej podobe.
Aus moderner Technik und Naturwissenschaft, 1999, Max Hueber Verlag, D-85737, ISBN 3-19-001629-1

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 148

A	B	C	D	E	FX
38,51	27,03	22,3	6,76	2,7	2,7

Lecturers: Mgr. Pavel Vilášek, Mgr. Alexandra Maďarová

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
  Type of activities: practicals
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
The subject continues the program of German language (3). It provides a course of intermediate and advanced German language.

Recommended literature:
Vilášek, P.: Nemčina pre študentov FMFI, Na webovej stránke autora v elektronickej podobe.
Vilma Václavíková: Nemčina pre študentov MFF UK, Vysokoškolský učebný text pre potrebu študentov KJP, č. 9793/1982 C VIII/2, 1983

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 78

A	B	C	D	E	FX
35,9	28,21	14,1	12,82	3,85	5,13

Lecturers: Mgr. Pavel Vilášek, Mgr. Alexandra Maďarová

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-401/12	**Course title:** Graph Algorithms

Educational activities:
  Type of activities: lecture
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 14

A	B	C	D	E	FX
64,29	14,29	7,14	0,0	14,29	0,0

Lecturers: prof. RNDr. Ján Plesník, DrSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2- MAT-225/15	**Course title:** Group Theory Applications in Discrete Mathematics

Educational activities:
  Type of activities: course
  Number of hours:
    per week: 4 **per level/semester:** 56
  Form of the course: on-site learning

Number of credits: 5
Recommended semester: 2.
Educational level: II.
Prerequisites:
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:

Past grade distribution
Total number of evaluated students: 4

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

Lecturers: doc. RNDr. Róbert Jajcay, DrSc.
Last change: 02.06.2015
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM+KAMŠ/2-MAT-314/15	**Course title:** Handling of Modern Software in Numerical Mathematics

Educational activities:
  Type of activities: course
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3
Recommended semester: 1.
Educational level: II.
Prerequisites:
Antirequisites: FMFI.KMANM/2-MAT-314/09
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:
Past grade distribution Total number of evaluated students: 8

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

Lecturers: doc. RNDr. Peter Guba, PhD., Mgr. Jela Babušíková, PhD.
Last change: 27.04.2017
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-910/15	**Course title:** Individual Work on Final Thesis (1)

Educational activities:
  Type of activities: independent work
  Number of hours:
    per week: per level/semester: 100s
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 2.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KMANM/2-MAT-910/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 8

A	B	C	D	E	FX
87,5	0,0	0,0	0,0	12,5	0,0

Lecturers: prof. RNDr. Ján Filo, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-911/15	**Course title:** Individual Work on Final Thesis (2)

Educational activities:
  Type of activities: independent work
  Number of hours:
    per week: per level/semester: 100s
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KMANM/2-MAT-911/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 8

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

Lecturers: prof. RNDr. Ján Filo, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAMŠ/2-MAT-114/15	**Course title:** Integral Transforms and Special Functions

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1., 3.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KAMŠ/2-MAT-114/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 19

A	B	C	D	E	FX
57,89	15,79	5,26	5,26	10,53	5,26

Lecturers: prof. RNDr. Marek Fila, DrSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-601/09	**Course title:** Introduction to Non-standard Analysis

Educational activities:
  Type of activities: lecture
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 1

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

Lecturers: prof. RNDr. Pavol Zlatoš, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAGDM/2-MAT-224/09	**Course title:** Linear Codes

Educational activities:
  Type of activities: lecture
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 51

A	B	C	D	E	FX
80,39	13,73	3,92	0,0	1,96	0,0

Lecturers: doc. RNDr. Róbert Jajcay, DrSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAMŠ/2-PMS-118/10	**Course title:** Markov Processes (1)

Educational activities:
 Type of activities: lecture / practicals
 Number of hours:
  per week: 2 / 2 **per level/semester:** 28 / 28
 Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:
 Preliminary semester evaluation: test and homeworks
 Examination: written examination
 Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%

Learning outcomes:
 After completing the course the student will master elementary discrete time Markov chains models. He will be able to classify states of a Markov chain and calculate stationary probability distributions.

Class syllabus:
 Markov property, transition probabilities, transition matrix, Chapman Kolmogorov equation, irreducibility of a chain. Classification of states, recurrent states, transient states, null recurrent states and positive recurrent states, periodicity. Existence of stationary distribution, ergodic distribution, necessary and sufficient conditions for ergodicity. Random walks, branching processes, absorbtion probabilities, mean time to absorbtion. Markov reward chains algorithms and Markov Chain Monte Carlo.

Recommended literature:
 Kalas, J: Markovove reťazce, skriptá MFF UK
 Norris, J.R.: Markov chains (1998)
 Ross, S.M.: Introduction to probability models (2006)

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 158

A	B	C	D	E	FX
23,42	17,72	27,85	24,05	5,7	1,27

Lecturers: doc. RNDr. Katarína Janková, CSc., doc. Mgr. Pavol Bokes, PhD.

Last change: 02.05.2017

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAMŠ/2-PMS-119/15	**Course title:** Markov Processes(2)

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
   per week: 2 / 1 **per level/semester:** 28 / 14
  Form of the course: on-site learning

Number of credits: 5

Recommended semester: 2.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KAMŠ/2-PMS-119/10

Course requirements:

Learning outcomes:
 After completing the course students will know properties of homogeneous Markov chains with continuous time. They will be able to use models based on these chains.

Class syllabus:
 Markov property for continuous time chains, probabilities of transition, initial distribution, Chapman Kolmogorov equation. Forces of transition and their properties, backward and forward systems of Kolmogorov differential equations. Statioanary and ergodic distribution of the chain. Models of linear growth, birth and death chains, Poisson process. Characterization of processes using jump chain and holding times. Queueing systems: M/M/n, M/M/infinity. Imbedded chain technique for M/G/1. Pollaczek Chinchin formula.

Recommended literature:
 Janková, K., Kilianová, S., Brunovský, P., Bokes, P.: Markovove reťazce a ich aplikácie. Epos 2014.
 Norris, J.:Markov Chains.Cambridge University Press 1997.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 121

A	B	C	D	E	FX
24,79	15,7	26,45	23,14	8,26	1,65

Lecturers: doc. RNDr. Katarína Janková, CSc., doc. Mgr. Pavol Bokes, PhD.

Last change: 20.02.2018

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-616/15	**Course title:** Mathematical Fundamentals of Quantum Theory

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 0

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

Lecturers: RNDr. Michal Demetrian, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KTFDF/2-FTF-112/15	**Course title:** Mathematical Physics (2)

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
   per week: 4 / 2 **per level/semester:** 56 / 28
  Form of the course: on-site learning

Number of credits: 8

Recommended semester: 1.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KTFDF/2-FTF-112/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 8

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

Lecturers: doc. RNDr. Marián Fecko, PhD.

Last change: 04.10.2016

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

STATE EXAM DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KMANM/2-MAT-951/15	**Course title:** Mathematics
Number of credits: 6	
Educational level: II.	
State exam syllabus:	
Last change: 22.01.2018	
Approved by: prof. RNDr. Ján Filo, CSc.	

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-322/09	**Course title:** Methods for Solving Systems with Sparse Matrices

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

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

Learning outcomes:

Class syllabus:
 Direct method's modifications for block tridiagonal systems. Minimalization of the fill-in for LU and LLT decomposition of matrices. Incomplete LU decomposition and iterative acceleration. Frontal methods. The acceleration of iterative methods by Chebyshev polynomial and by conjugate gradients. Block overrelaxation. Methods for symmetrisable iterative matrices. Preconditioning of systems. Multigrid method. Projective methods on Krylov subspaces. Sparse problem of least squares.

Recommended literature:
 Samarskij A.A., Nikolajev J.S.: Numerické řešení velkých řídkych soustav, Academie praha, 1984 (preklad z ruštiny)
 George A., Liu J.W-H: Computer Solution of Large Sparse Positive Definite Systems, Prentice-Hall, Inc. Englewood Cliffs, N.J., 1981
 Osterby O., Zlatev Z.: Direct Methods for Sparse Matrices, Springer Verlag, 1983
 Hageman L.A., Young D.M.: Applied Iterative Methods, Acad. Press, 1981
 Hackbusch W.: Iterative Solution of Large Sparse Systems of Equations, Spring.-Verlag, N.Y. , 1993
 Saad Y.: Iterative Methods for Sparse Linear Systems, SIAM, Philadelphia, 2003

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 27

A	B	C	D	E	FX
33,33	7,41	22,22	18,52	18,52	0,0

Lecturers: Mgr. Peter Novotný, PhD., RNDr. Tatiana Bušinská, CSc.
Last change: 02.06.2015
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAMŠ/2-PMS-116/10	Course title: Multivariate Statistical Analyses (2)

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
    per week: 2 / 2 per level/semester: 28 / 28
  Form of the course: on-site learning

Number of credits: 5

Recommended semester: 4.

Educational level: II.

Prerequisites:

Recommended prerequisites:
 2-PMS-115 Multivariate Statistical Analyses (1)

Antirequisites: FMFI.KAMŠ/2-PMS-106/00

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

Learning outcomes:
Upon satisfactory completion of the course, students will be able to use selected multivariate statistical methods of dimensionality reduction, data clustering, discrimination and classification.

Class syllabus:
1) Principal components: theoretical properties of principal components, ratio of explained variance, selection of the number of principal components, sample principal components; 2) Metric multidimensional scaling; 3) Factor analysis: model of factor analysis, estimation of factor loadings, factor rotations, estimation of factor scores; 4) Canonical correlations: theoretical properties of canonical correlations, sample canonical correlations, coefficient of multiple correlation; 5) Cluster analysis: partitioning methods (k-means, k-medoids, normal model based clustering), hierarchical methods (agglomerative, divisive); 6) Linear discriminant analysis: derivation of linear discriminant rule from the Bayes classifier, estimation of the probability of misclassification; 7) Classification trees: recursive partitioning, optimal pruning; 8) Support vector machines: linearly separable and linearly non-separable case, nonlinear classification using support vector machines; 9) Artificial neural networks: introduction to the history and applications of neural networks, multilayer feed-forward neural network for classification.

Recommended literature:
 1) Izenman, A: Modern Multivariate Statistical Techniques, Springer 2008; 2) Everitt BS, Hothorn T: A Handbook of Statistical Analyses Using R, Chapman and Hall/CRC 2006; 3) Everitt BS: An R and S-plus Companion to Multivariate Analysis, Springer 2005; 4) Lamoš F,

Potocký R: Pravdepodobnosť a matematická štatistika (štatistické analýzy), UK 1998; 5) Online materials of the lecturer.

Languages necessary to complete the course:
Slovak, English

Notes:
Further information can be found at http://www.iam.fmph.uniba.sk/ospm/Harman/teaching.htm

Past grade distribution
Total number of evaluated students: 324

A	B	C	D	E	FX
47,22	24,38	14,2	6,48	6,17	1,54

Lecturers: doc. Mgr. Radoslav Harman, PhD.

Last change: 11.04.2017

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-122/15	**Course title:** Nonlinear Functional Analysis

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
    per week: 2 / 2 **per level/semester:** 28 / 28
  Form of the course: on-site learning

Number of credits: 5

Recommended semester: 2.

Educational level: II., III.

Prerequisites:

Antirequisites: FMFI.KMANM/2-MAT-122/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 5

A	B	C	D	E	FX
80,0	0,0	0,0	0,0	0,0	20,0

Lecturers: prof. RNDr. Michal Fečkan, DrSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAMŠ/2-MAT-311/15	**Course title:** Nonlinear Programming

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
   per week: 2 / 2 **per level/semester:** 28 / 28
  Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KAMŠ/2-MAT-311/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 4

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

Lecturers: doc. RNDr. Mária Trnovská, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAGDM/2-MAT-624/09	**Course title:** Number Theory (2)

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes: Students will learn to solve basic types of Diophantine equations. They will be able to use various types of densities to compare various subsets of the set of positive integers.

Class syllabus: Various types of densities (Schnirelman, asymptotic and logarithmic density). Diophantine equations and Pythagorean triples. Results on expressing integers as sums of squares. Minkowski theorem. Cantor's expansions of real numbers. Proofs of rrationality of some real numbers.

Recommended literature: Elementary number theory / Gareth A. Jones, J. Mary Jones. London : Springer, 1998

Languages necessary to complete the course:

Notes:

Past grade distribution Total number of evaluated students: 24

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

Lecturers: RNDr. Martin Sleziak, PhD.

Last change: 31.10.2016

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-327/12	**Course title:** Numerical Modelling in Optimization Problems

Educational activities:
  Type of activities: course
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 13

A	B	C	D	E	FX
76,92	0,0	7,69	7,69	7,69	0,0

Lecturers: prof. RNDr. Jozef Kačur, DrSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-112/15	**Course title:** Partial Differential Equations (1)

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
    per week: 2 / 2 **per level/semester:** 28 / 28
  Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KMANM/2-MAT-112/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 7

A	B	C	D	E	FX
42,86	14,29	28,57	0,0	14,29	0,0

Lecturers: doc. RNDr. Eugen Viszus, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAMŠ/2-MAT-121/09	**Course title:** Partial Differential Equations (2)

Educational activities:
 Type of activities: lecture / practicals
 Number of hours:
  per week: 2 / 2 **per level/semester:** 28 / 28
 Form of the course: on-site learning

Number of credits: 5

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:
 Scale of assessment (preliminary/final): 30/70

Learning outcomes:

Class syllabus:
 1. Spaces involving time.
 2. Linear parabolic equations of the second order.
 3. Linear hyperbolic equations of the second order.
 4. Some methods of theory of nonlinear PDEs.

Recommended literature:
 L.C. Evans, Partial Differential Equations, AMS, 1998.
 F. John, Partial Differential Equations, Springer, 1982.
 J. David Logan, Applied Partial Differential Equations, Springer, 2004.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 32

A	B	C	D	E	FX
34,38	25,0	9,38	12,5	18,75	0,0

Lecturers: prof. RNDr. Marek Fila, DrSc., doc. Mgr. Richard Kollár, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-606/09	**Course title:** Philosophical Questions of Mathematics Fundamentals

Educational activities:
 Type of activities: lecture
 Number of hours:
  per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1., 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 8

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

Lecturers: prof. RNDr. Pavol Zlatoš, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
  Type of activities: practicals
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1329

A	B	C	D	E	FX
99,1	0,6	0,0	0,0	0,0	0,3

Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Ondrej Podkonický, doc. PhDr. Vojtech Potočný, CSc., Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

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

Educational activities:
  Type of activities: practicals
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1223

A	B	C	D	E	FX
99,84	0,08	0,0	0,0	0,0	0,08

Lecturers: Mgr. Martin Dovičák, Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Branislav Nedbálek, PaedDr. Mikuláš Ortutay, Mgr. Ondrej Podkonický, doc. PhDr. Vojtech Potočný, CSc., Mgr. Júlia Raábová, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

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

Educational activities:
  Type of activities: practicals
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 992

A	B	C	D	E	FX
99,4	0,4	0,0	0,0	0,0	0,2

Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Ondrej Podkonický, doc. PhDr. Vojtech Potočný, CSc., Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

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

Educational activities:
  Type of activities: practicals
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 868

A	B	C	D	E	FX
99,31	0,46	0,0	0,0	0,12	0,12

Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Ondrej Podkonický, doc. PhDr. Vojtech Potočný, CSc., Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, Mgr. Branislav Nedbálek

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAMŠ/2-EFM-152/15	**Course title:** Principles of Mathematical Modelling in Science and Engineering

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 45

A	B	C	D	E	FX
48,89	24,44	8,89	8,89	2,22	6,67

Lecturers: doc. RNDr. Peter Guba, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KTFDF/2-FTF-111/00	**Course title:** Representations of Groups

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 4 **per level/semester:** 56
  Form of the course: on-site learning

Number of credits: 6

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
What are groups and representations; Schur lemma and its applications; invariants, characters; tensor products and bilinear maps; real, complex and quaternion types; representations of spatial and symmetric groups; Peter-Weyl theorem; Cartan subgroups, roots and Dynkin diagrams; Weyl character formula, highest weights and classification of representations; representations of classical compact groups and their real forms.

Recommended literature:
Sternberg: Group Theory and Physics

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 58

A	B	C	D	E	FX
79,31	12,07	5,17	1,72	0,0	1,72

Lecturers: Mgr. Michal Širaň, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KTFDF/2-FTF-111/16	**Course title:** Representations of Groups

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
   per week: 4 / 1 **per level/semester:** 56 / 14
  Form of the course: on-site learning

Number of credits: 7

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 3

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

Lecturers: Mgr. Michal Širaň, PhD.

Last change: 04.04.2017

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
  Type of activities: practicals
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
 The subject provides a course in Russian language for beginners.

Recommended literature:
 The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 642

A	B	C	D	E	FX
60,9	16,2	9,66	4,83	1,71	6,7

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
  Type of activities: practicals
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
 The subject continues the program of Russian language (1) and provides a course of Russian for beginners.

Recommended literature:
 The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 389

A	B	C	D	E	FX
65,81	16,2	9,0	3,34	1,03	4,63

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
 Type of activities: practicals
 Number of hours:
  per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
 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:
 The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 191

A	B	C	D	E	FX
70,68	17,28	8,38	2,62	0,0	1,05

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

Educational activities:
  Type of activities: practicals
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
 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:
 The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 130

A	B	C	D	E	FX
73,85	13,85	7,69	3,08	0,77	0,77

Lecturers: PhDr. Elena Klátiková

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-619/09	**Course title:** Selected Chapters in the Theory of Functions of Complex Variable

Educational activities:
 Type of activities: lecture
 Number of hours:
  per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Recommended prerequisites:
 1-MAT-416 or 1-FYZ-225 - introduction to methods of complex analysis.

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

Learning outcomes:

Class syllabus:
 Cauchy type integrals, principal value integral, Hilbert and Fourier transforms, analytic continuation, compactness for families of analytic functions, infinite series (Mittag-Leffler's theorem), infinite products (Weierstrass factorization), Gamma function, Stirling's formula, Riemann Zeta function, conformal maps, Riemann mapping theorem, elliptic functions, modular forms, Riemann surfaces and global analytic functions, branching points, Picard theorem, etc. Covered topics could be customized to match students' interests.

Recommended literature:
 M. Ablowitz, A. Fokas: Complex variables. Introduction and Applications, Cambridge Texts in Applied Mathematics, 2003
 L. V. Ahlfors: Complex Analysis, McGraw-Hill, New York, 1979.
 E. Stein, R. Shakarchi: Complex Analysis, Princeton University Press, 2003
 A. I. Markushevich: Theory of functions of complex variable, Chelsea, New York, 1977

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 14

A	B	C	D	E	FX
85,71	7,14	0,0	7,14	0,0	0,0

Lecturers: Mgr. Martin Niepel, PhD.

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-113/09	**Course title:** Selected Parts of Real Analysis

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
   per week: 2 / 1 **per level/semester:** 28 / 14
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:
 A. N. Kolmogorov, S. V. Fomin : Základy teorie funkcí a funkcionální analýzy. SNTL, Praha 1975.
 J. Lukeš a kol.: Problémy z matematické analýzy. Skripta Univerzity Karlovy, Praha 1982.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 44

A	B	C	D	E	FX
75,0	13,64	4,55	6,82	0,0	0,0

Lecturers: doc. RNDr. Eugen Viszus, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2- MAT-213/09	**Course title:** Selected Topics in Algebra (1)

Educational activities:
  Type of activities: lecture
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 30

A	B	C	D	E	FX
46,67	10,0	16,67	6,67	16,67	3,33

Lecturers: doc. RNDr. Jaroslav Guričan, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2- MAT-222/15	**Course title:** Selected Topics in Algebra (2)

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KAGDM/2-MAT-222/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 3

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

Lecturers: doc. RNDr. Jaroslav Guričan, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-231/09	**Course title:** Selected Topics in Cryptology

Educational activities:
  Type of activities: lecture
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 32

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

Lecturers: doc. RNDr. Róbert Jajcay, DrSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAMŠ/2-MAT-326/12	**Course title:** Selected Topics in Financial Mathematics

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
    per week: 2 / 2 **per level/semester:** 28 / 28
  Form of the course: on-site learning

Number of credits: 5

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 19

A	B	C	D	E	FX
47,37	15,79	21,05	5,26	0,0	10,53

Lecturers: Mgr. Gábor Szűcs, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-132/15	**Course title:** Selected Topics of Mathematical Physics

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
   per week: 2 / 2 **per level/semester:** 28 / 28
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 4.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KAMŠ+KMANM/2-MAT-132/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 2

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

Lecturers: doc. RNDr. Eugen Viszus, CSc., RNDr. Michal Demetrian, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KMANM/2-MAT-313/09	**Course title:** Selected Topics of Numerical Algebra

Educational activities: Type of activities: lecture **Number of hours:**   per week: 2 per level/semester: 28 **Form of the course:** on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

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

Learning outcomes:

Class syllabus: Application of QR-algorithm (for eigenvalue problem and invariant subspaces) and its modifications to solve generalised eigenvalue problem, compute singular decomposition of matrices, solve some matrix equations -f.e. quadratic equation (for Riccati equation), compute matrix function. Generalised eigenvalue problem for symmetric matrices. Jacobi-like methods for nonsymmetric eigenvalue problem. Sparse eigenvalue problem (generalized Lanczos' method , special modifications of power method). Solution of singular systems by iterative methods. Last square problem with constraints.

Recommended literature: Golub G.H., van Loan C.F.: Matrix computations, North Oxford Academic, Oxford, 1983, 1988, The John Hopkins University Press, Baltimore and London, 1996 Ikramov Ch.D: Nesimmetričnaja problema sobstvennych značenij, Nauka, Moskva, 1991 Parlett B.N.: The Symmetric Eigenvalue Problem, Prentice-Hall, Inc., Englewood Cliffs, N.J. 1980 Saad Y.: Numerical Methods for Large Eigenvalue Problem, Manch. Univ. Press, 1992

Languages necessary to complete the course:

Notes:

Past grade distribution Total number of evaluated students: 27

A	B	C	D	E	FX
29,63	7,41	14,81	25,93	22,22	0,0

Lecturers: Mgr. Peter Novotný, PhD., RNDr. Tatiana Bušinská, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-620/09	**Course title:** Seminar in Algebraic and Differential Topology (1)

Educational activities:
  Type of activities: seminar
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 3

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

Lecturers: prof. RNDr. Július Korbaš, CSc., Mgr. Martin Niepel, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-625/09	**Course title:** Seminar in Algebraic and Differential Topology (2)

Educational activities:
  Type of activities: seminar
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 1

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

Lecturers: prof. RNDr. Július Korbaš, CSc., Mgr. Martin Niepel, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KI/2-MAT-602/09	**Course title:** Seminar in Graph Theory (1)

Educational activities:
  Type of activities: seminar
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 7

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

Lecturers: prof. RNDr. Martin Škoviera, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KI/2-MAT-611/09	**Course title:** Seminar in Graph Theory (2)

Educational activities:
 Type of activities: seminar
 Number of hours:
  per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 6

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

Lecturers: prof. RNDr. Martin Škoviera, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2- MAT-603/09	**Course title:** Seminar in Number Theory (1)

Educational activities:
  Type of activities: seminar
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 15

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

Lecturers: RNDr. Martin Sleziak, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2- MAT-612/09	**Course title:** Seminar in Number Theory (2)

Educational activities:
  Type of activities: seminar
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 12

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

Lecturers: RNDr. Martin Sleziak, PhD.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KMANM/2- MAT-307/11	Course title: Solutions of Tasks in Optimal Management and of Inversion Problems

Educational activities: Type of activities: lecture Number of hours: per week: 2 per level/semester: 28 Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements: Scale of assessment (preliminary/final): 50/50

Learning outcomes:

Class syllabus: Motivating models and formulation of optimal control; minimization methods, differentiation of functionals (differential Gatteaux), Lagrange identity and the adjoint system. Maximum principle of Pontriagin. Numerical approximation of optimal control problems. Solusion of the inverse problems by the method of optimal control. Regularization of ill-posed problems, Tichonoff's regularization. Approximation of optimal control problems by the methods of nonlinear programming . Solution of some models from engineering practice (determination of parameters in heat transfer problems, Stefanovej problem, transport and adsorption).

Recommended literature: R. P. Fedorenko: Približennoe rešenie zadač optimalnovo upravlenia (rusky) Moskva "Nauka" Fyziko-matematičeskaja literatura 1978.

Languages necessary to complete the course:

Notes:

Past grade distribution Total number of evaluated students: 21

A	B	C	D	E	FX
38,1	23,81	9,52	4,76	19,05	4,76

Lecturers: prof. RNDr. Jozef Kačur, DrSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-332/09	**Course title:** Solving of Convection-Diffusion Problems

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus: Mathematical modelling, construction of variational formulation; existence and uniqueness of the variational solution; numerical approximation by the methods: „up wind", „ method of characteristics" operator splitting; convergence of apptroximations; solution of transport problem, diffusion and adsorption; transport of contaminant in porous media.

Recommended literature: J.Kacur: Numericke metody riesenia PDE (skripta v elektronickej forme) R.J.Le Veque: Numerical Methods for Conservation Law,Birkhauser,Basel 1992

Languages necessary to complete the course:

Notes:

Past grade distribution Total number of evaluated students: 19

A	B	C	D	E	FX
47,37	15,79	5,26	21,05	10,53	0,0

Lecturers: prof. RNDr. Jaroslav Jaroš, CSc., prof. RNDr. Jozef Kačur, DrSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM+KAMŠ/2-MAT-341/15	**Course title:** Solving of Engineering Problems by Numerical Software

Educational activities:
  Type of activities: course
  Number of hours:
   per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3
Recommended semester: 4.
Educational level: II.
Prerequisites:
Antirequisites: FMFI.KMANM/2-MAT-341/09
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:

Past grade distribution
Total number of evaluated students: 3

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

Lecturers: doc. RNDr. Peter Guba, PhD., Mgr. Jela Babušíková, PhD.
Last change: 27.04.2017
Approved by: prof. RNDr. Ján Filo, CSc.

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-324/09	**Course title:** Solving of Stiff Problems

Educational activities:
 Type of activities: lecture
 Number of hours:
  per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

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

Learning outcomes:

Class syllabus:
 Identification of stiff problems by ordinary and partial differential equations. Examples of stiff equations. Explicit and implicit Runge – Kutta methods. A-stability, B-stability, contractivity, algebraic stability, AN-stability, B-convergence, variable step size. Gauss- Legendre method, Radau method, Lobatto method.

Recommended literature:
 Dekker, Verwer: Stability of Runge –Kutta Method for Stiff Nonlinear Differential Equations. North-Holland 1984
 Hairer, Wanner: Solving Ordinary Differential Equations II., Springer Verlag 1991.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 23

A	B	C	D	E	FX
69,57	21,74	8,7	0,0	0,0	0,0

Lecturers:

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-608/09	**Course title:** Special Matrices and Algorithms

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

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

Learning outcomes:

Class syllabus:
 Algorithms for Vandermonde and Toeplitz systems. Various types and occurrence of generalised inverse matrices (A--, A+, Drazin inverse, group inverse). Perron-Frobenius' theory of nonnegative matrices and its generalization. M-matrices, monotone matrices. Stable matrices – criteria of stability, numerical realisation.. Kronecker product of matrices and matrix equations. Computing of matrix functions by generalised Taylor theorem. Generalised matrix norms. Examples of problems related with matrices above.

Recommended literature:
 Fiedler M.: Speciální matice v numerické matematice, SNTL, Praha 1981
 Golub G.H., van Loan C.F.: Matrix Computations, North Oxford Academic, Oxford 1983, 1988, 2000
 Horn R.A., Johnson Ch.R.: Matrix Analysis, Cambridge Univ. Press, London-N.Y.-New Rochelle-Melbourne-Sydney, 1986
 Horn R.A., Johnson Ch.R. :Topics in Matrix Analysis, Cambridge Univ. Press, 1991, 1999
 Vojevodin V.V., Tyrtyšnikov E.E.: Vyčisliteľnyje processy s teplicevymi matricami, Nauka, Moskva, 1987

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 11

A	B	C	D	E	FX
36,36	9,09	9,09	36,36	9,09	0,0

Lecturers:

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KTV/1-MXX-115/15	**Course title:** 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: 2.

Educational level: I., 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: 171

A	B	C	D	E	FX
99,42	0,0	0,58	0,0	0,0	0,0

Lecturers: Mgr. Martin Dovičák, Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Ondrej Podkonický

Last change: 25.05.2016

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KTV/1-MXX-115/15	**Course title:** 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., 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: 171

A	B	C	D	E	FX
99,42	0,0	0,58	0,0	0,0	0,0

Lecturers: Mgr. Martin Dovičák, Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Ondrej Podkonický

Last change: 25.05.2016

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KTV/1-MXX-215/15	**Course title:** 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: 4.

Educational level: I., 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: 94

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

Lecturers: Mgr. Martin Dovičák, Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Ondrej Podkonický

Last change: 25.05.2016

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KTV/1-MXX-215/15	**Course title:** 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: 3.

Educational level: I., 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: 94

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

Lecturers: Mgr. Martin Dovičák, Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Ondrej Podkonický

Last change: 25.05.2016

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAMŠ/2-PMS-123/10	**Course title:** Stochastic Simulation Methods

Educational activities:
 Type of activities: lecture
 Number of hours:
  per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KAMŠ/2-PMS-122/00

Course requirements:
 Evaluation: project, oral examination
 Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
 Scale of assessment (preliminary/final): 80/20

Learning outcomes:
 Upon satisfactory completion of the course, students will know basic methods of computer generation of random numbers, general random variables, and random vectors. The students will be able to use the random variates generation for Monte-Carlo sampling, and for the evaluation of complex stochastic systems.

Class syllabus:
 Generating realizations of random numbers, random variables and random vectors. Statistical analysis of simulation data. Basic Monte Carlo methods.

Recommended literature:
 Ross S: Simulation, Elsevier Academic Press 2006
 Fishman GS: Monte Carlo: Concepts, Algorithms and Applications, Springer 1996
 Online materials of the lecturer

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 215

A	B	C	D	E	FX
46,51	22,33	13,49	5,58	6,51	5,58

Lecturers: doc. Mgr. Radoslav Harman, PhD.

Last change: 08.05.2017

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-142/14	**Course title:** Transport, conservation laws and equations of motion

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: II.

Prerequisites: FMFI.KMANM/2-MAT-112/15 - Partial Differential Equations (1) and FMFI.KAMŠ/2-MAT-121/09 - Partial Differential Equations (2)

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 6

A	B	C	D	E	FX
50,0	16,67	16,67	16,67	0,0	0,0

Lecturers: prof. RNDr. Ján Filo, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MMN-140/15	**Course title:** Unconventional Application of Mathematical Analysis

Educational activities:
  Type of activities: seminar
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: II.

Prerequisites:

Antirequisites: FMFI.KMANM/2-MAT-621/09

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 10

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

Lecturers: prof. RNDr. Jaroslav Jaroš, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-212/09	**Course title:** Universal Algebras and Lattices (1)

Educational activities:
  Type of activities: seminar
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 25

A	B	C	D	E	FX
72,0	12,0	12,0	0,0	4,0	0,0

Lecturers: prof. RNDr. Tibor Katriňák, DrSc., doc. RNDr. Jaroslav Guričan, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-221/09	**Course title:** Universal Algebras and Lattices (2)

Educational activities:
 Type of activities: seminar
 Number of hours:
  per week: 2 **per level/semester:** 28
 Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 24

A	B	C	D	E	FX
83,33	16,67	0,0	0,0	0,0	0,0

Lecturers: prof. RNDr. Tibor Katriňák, DrSc., doc. RNDr. Jaroslav Guričan, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2- MAT-618/09	**Course title:** Universal Algebras and Lattices (3)

Educational activities:
  Type of activities: seminar
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 3.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 11

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

Lecturers: prof. RNDr. Tibor Katriňák, DrSc., doc. RNDr. Jaroslav Guričan, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAGDM/2-MAT-623/09	**Course title:** Universal Algebras and Lattices (4)

Educational activities:
  Type of activities: seminar
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 3

Recommended semester: 4.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 5

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

Lecturers: prof. RNDr. Tibor Katriňák, DrSc., doc. RNDr. Jaroslav Guričan, CSc.

Last change: 02.06.2015

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

COURSE DESCRIPTION

University: Comenius University in Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KMANM/2-MAT-325/12	**Course title:** Variational Methods in Differential Equations

Educational activities:
  Type of activities: lecture
  Number of hours:
    per week: 2 **per level/semester:** 28
  Form of the course: on-site learning

Number of credits: 4

Recommended semester: 1.

Educational level: II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 17

A	B	C	D	E	FX
47,06	5,88	11,76	11,76	17,65	5,88

Lecturers: prof. RNDr. Jozef Kačur, DrSc.

Last change: 02.06.2015

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