Course descriptions

TABLE OF CONTENTS

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAG/1-INF-115/00	**Course title:** Algebra (1)

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

Number of credits: 5

Recommended semester: 3.

Educational level: I.

Prerequisites:

Course requirements:
 homework, tests, written and oral final exam
 Grading: A 90%, B 80%, C 70%, D 60%, E 50%, Fx < 50%
 Scale of assessment (preliminary/final): Semester 40% (30% tests + 10% homework) / 60% final
 exam (30% test + 30% oral exam).

Learning outcomes:
 Understanding of basic notions and methods of linear algebra and ability to use them to solve
 various theoretical and practical problems.

Class syllabus:
 Basic notions necessary for building abstract vector spaces (group, fields, vector spaces).
 Subspaces, linear dependence and independence of vectors, Steinitz theorem, basis of vector
 space. Matrices. Linear mappings. Composition of linear mappings. Inverse matrices. Solutions
 of hommogenous and nonhomogenous systems of linear equations. Determinants, basic properties
 and applications.

Recommended literature:
 Lineárna algebra a geometria : Cesta z troch rozmerov s presahmi do príbuzných odborov /
 Pavol Zlatoš. Bratislava : Albert Marenčin, 2011; elektronická verzia dostupná na http://
 thales.doa.fmph.uniba.sk/zlatos/la/LAG_A4.pdf
 Algebra a teoretická aritmetika 1 / Tibor Katriňák ... [et al.]. Bratislava : Univerzita Komenského,
 2002
 Pěstujeme lineární algebru / Luboš Motl, Miloš Zahradník. Praha : Karolinum, 2002
 Linear algebra done right / Sheldon Axler. New York : Springer, 1997
 Custom course materials published on the course website.

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 657					
A	B	C	D	E	FX
23,29	11,42	13,24	11,87	27,55	12,63

Lecturers: doc. RNDr. Jaroslav Guričan, CSc., RNDr. Martin Sleziak, PhD.

Last change: 18.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAG/1-INF-156/10	**Course title:** Algebra (2)

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

Number of credits: 4

Recommended semester: 4.

Educational level: I.

Prerequisites: FMFI.KAG/1-INF-115/00 - Algebra (1)

Course requirements:

Learning outcomes:
Understanding of basic notions and methods from group theory, ring theory and field theory and ability to use them to solve various theoretical and practical problems.

Class syllabus:
Groups, subgroups, homomorphisms, quotient groups. Rings, ideals, maximal ideal and prime ideals, their relationship to fields in integral domains when creating quotient ring. Euclidean domains, principal ideal domains, unique factorization domains. Divisibility and unique factorization. Rings of polynomials, factorization into irreducible polynomial, (multiple) roots, derivative and Taylor expansion. Field extensions. Non-solvability of angle trisection, doubling the cube, squaring the cirle. Finite filed and their classification, RSA.

Recommended literature:
Lineárna algebra a geometria : Cesta z troch rozmerov s presahmi do príbuzných odborov / Pavol Zlatoš. Bratislava : Albert Marenčin, 2011
Algebra a teoretická aritmetika 1 / Tibor Katriňák ... [et al.]. Bratislava : Univerzita Komenského, 2002
Electronic course notes published on the course web page

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 512

A	B	C	D	E	FX
23,24	11,13	14,06	16,99	28,71	5,86

Lecturers: doc. RNDr. Jaroslav Guričan, CSc., Mgr. Tomáš Rusin, PhD., RNDr. Martin Sleziak, PhD.

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAG/1-INF-617/19	**Course title:** Algebra Complementary Classes

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

Number of credits: 1

Recommended semester: 4.

Educational level: I.

Prerequisites:

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

Learning outcomes:
 Expanding on the material studied in the subject Algebra (2). Knowledge of some additional topics concerning groups, rings and fields. Practical skills in computations with polynomials and field extensions.

Class syllabus:
 Properties of groups and rings. Computations and manipulation with polynomials. Fields extensions, finite fields.

Recommended literature:
 Electronic course notes published on the course website.

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 93

A	B	C	D	E	FX
34,41	11,83	16,13	8,6	10,75	18,28

Lecturers: RNDr. Martin Sleziak, PhD., Mgr. Tomáš Rusin, PhD.

Last change: 17.06.2019

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KI/1-INF-220/00	**Course title:** Algorithms and Data Structures

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

Number of credits: 5

Recommended semester: 3.

Educational level: I.

Prerequisites:

Recommended prerequisites:
 1-INF-166 Programming (2) in Java or 1-AIN-170 Programming (2)

Course requirements:
 To complete the course, it is necessary to obtain at least 70% of points during the semester. The grade is based on a final written exam and an optional oral exam.
 Scale of assessment (preliminary/final): 0/100

Learning outcomes:
 Students will be familiar with basics of design and analysis of efficient algorithms and data structures. The students will be able to analyze the time complexity of basic algorithms, to use basic algorithmic techniques (sorting and searching arrays), use basic efficient data structures and understand their implementation.

Class syllabus:
 Asymptotic running time analysis, methods of estimation, notation. Sorting: meargesort, heapsort, quicksort; sorting in linear time. Data structures: priority queues, hash tables, binary search trees and their balancing. Efficient algorithm design techniques: dynamic programming, greedy algorithms.

Recommended literature:
 Introduction to algorithms / Thomas H. Cormen ... [et al.]. Cambridge, Mass. : MIT Press, 2001
 Algorithms in C : Parts 1-4 : Fundamentals, data structures, sorting, searching / Robert Sedgewick. Boston : Addison-Wesley, 1998
 Custom course notes published at the course website

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 540					
A	B	C	D	E	FX
42,04	13,89	14,44	12,41	11,85	5,37

Lecturers: RNDr. Ing. František Kardoš, PhD.

Last change: 23.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-BIN-921/15	**Course title:** BSc Seminar (1)

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

Number of credits: 2

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements:
 Active participation, presentation, homework.
 Scale of assessment (preliminary/final): 50/50

Learning outcomes:
 Students will be familiar with thesis requirements. They will select a thesis topic and a supervisor, find appropriate literature and submit the first portion of the thesis text.

Class syllabus:
 Types of theses, their structure. Planning the thesis work, analyzing the problem. Specifics of interdisciplinary topics in bioinformatics. Student presentations of selected topics.

Recommended literature:
 Ako písať vysokoškolské a kvalifikačné práce : Ako písať seminárne práce, ročníkové práce, práce študentskej vedeckej a odbornej činnosti, diplomové práce, záverečné a atestačné práce, dizertácie / Dušan Katuščák. Bratislava : Stimul, 1998

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 18

A	B	C	D	E	FX
50,0	16,67	16,67	5,56	0,0	11,11

Lecturers: doc. Mgr. Bronislava Brejová, PhD., doc. RNDr. Dana Pardubská, CSc., doc. Mgr. Tomáš Plachetka, Dr.

Last change: 08.02.2018

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KI/1-BIN-922/15	**Course title:** BSc Seminar (2)

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

Number of credits: 4

Recommended semester: 6.

Educational level: I.

Prerequisites:

Course requirements:
 Active participation, presentations, homework, thesis submisssion
 Scale of assessment (preliminary/final): 40/60

Learning outcomes:
 Students will be familiar with research methods and principles of technical writing in computer science and bioinformatics. Students will be able to present their results in both written and oral form. They will be familiar with required thesis form and style.

Class syllabus:
 Research methods, experimental evaluation. Principles of technical writing (typical document structure, references, illustrations and tables, appendices, correct use of formalism, authorship and plagiarism). Oral presentation guidelines (structure of a presentation, recommended visual aids). Regular presentation of current progress on the thesis topic, group discussion.

Recommended literature:
 Ako písať vysokoškolské a kvalifikačné práce : Ako písať seminárne práce, ročníkové práce, práce študentskej vedeckej a odbornej činnosti, diplomové práce, záverečné a atestačné práce, dizertácie / Dušan Katuščák. Bratislava : Stimul, 1998

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 229

A	B	C	D	E	FX
84,28	9,17	4,37	0,44	0,0	1,75

Lecturers: doc. Mgr. Bronislava Brejová, PhD., doc. RNDr. Dana Pardubská, CSc., doc. Mgr. Tomáš Plachetka, Dr.

Last change: 06.09.2019
Approved by:

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KI/1-BIN-990/15	**Course title:** BSc Thesis Defense
Number of credits: 12	
Educational level: I.	
Prerequisites: FMFI.KI/1-BIN-922/15 - BSc Seminar (2)	
Course requirements: Final state exam Scale of assessment (preliminary/final): 0/100	
Learning outcomes: By completing and defending bachelor theses, students will demonstrate their ability to work in the area of bioinformatics.	
Class syllabus: Defense of the bachelor thesis.	
State exam syllabus:	
Languages necessary to complete the course: Slovak, English	
Last change: 11.03.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI-PriF.KAgCh/1-BIN-112/15	**Course title:** Basic Chemical Calculation and Nomenclature

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

Number of credits: 2

Recommended semester: 1.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KAgCh/N-bBXX-019/22

Course requirements:
During the semester, the student passes three written tests. Grade A will be awarded for at least 90 points, B for at least 80 points, C for at least 70 points, D for at least 60 points and E for at least 50 points. Credits will not be awarded to a student who scores less than 50 points.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
By completing the course, students will master the system of chemical nomenclature of inorganic substances and basic chemical calculations with emphasis on solutions.

Class syllabus:
Nomenclature of inorganic compounds: binary, pseudobinary, acids, salts, hydrogens and crystallide hydrates. Nomenclature of additive and coordination compounds. Basic quantities used in chemical calculations: amount of substance, mass, volume, the number of particles. The relationship between the amount of substance and the volume of an ideal gas. Quantities expressing the composition of solutions. Calculations with mass fraction and amount concentration. Balance equations. Calculations with volume fraction and mass concentration. Conversions between different ways of defining composition of solutions. Solubility of substances and composition of saturated solutions. Stoichiometry of chemical compounds. Stoichiometry of chemical equations. Calculations according to chemical equations. PH calculations of aqueous solutions, strong acids and bases. Osmotic pressure.

Recommended literature:
V. Fajnor a kol.: Cvičenia z anorganickej chémie pre biológov. 2. vyd. Bratislava: Univerzita Komenského, 2003.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution					
Total number of evaluated students: 46					
A	B	C	D	E	FX
23,91	19,57	13,04	10,87	10,87	21,74

Lecturers: RNDr. Jana Chrappová, PhD., doc. RNDr. Michal Galamboš, PhD.

Last change: 11.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI-PriF.KBCh/1- BIN-104/15	**Course title:** Biochemistry

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

Number of credits: 5

Recommended semester: 2.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KBCh/N-bBXX-027/15

Course requirements:
 Protocols, tests, written final exam.
 Scale of assessment (preliminary/final): 30/70

Learning outcomes:
 The course explains basic biochemical principles and terminology. The students will understand (i) relationship between the structure and function of biomolecules - carbohydrates, lipids and proteins (ii) important and main processes of acquiring, storing and converting energy in living organisms (photosynthesis,carbohydrate and lipid metabolism, amino acid degradation). The practical portion of the course allows students to gain experience with basic biochemical methods.

Class syllabus:
 (1) Chemistry as a logical foundation of biology. (2) Amino acids and proteins. (3) Carbohydrates (4) Lipids and biological membranes (5) Enzymes (6) Overview of metabolism (7) Metabolism of carbohydrates (8) Citric acid cycle, glyoxylate cycle (9) Oxidative phosphorylation (10) Photosynthesis {11} Metabolism of lipids (12) Amino acid degradation.

Recommended literature:
 Murray R. K., Bender D. A., Botham K. M., Kennelly P. J., Rodwell V. W., Weil P. A. Harperova ilustrovaná biochemie. Vyd. Galén, Praha, 2012, 730 s. ISBN 978-80-7262-907-7
 Voet D., Voetová J.G. Biochemie. 1. české vyd. Praha: Victoria Publishing, 1995, 1325 s. ISBN 80-85605-44-9
 Vodrážka, Z. Biochemie. 2., opr. vyd. Praha: Academia, 1996, 180, 135, 191 s. ISBN 80-200-0600-1. Dotisk 2007
 Mikušová, K. - Kollárová, M.: Princípy biochémie : V schémach a v príkladoch. Bratislava : Univerzita Komenského, 2005, 2008, 164 s. ISBN 978-80-223-2567-7
 Custom course materials

Languages necessary to complete the course:

Slovak

Notes:

Past grade distribution
Total number of evaluated students: 18

A	B	C	D	E	FX
0,0	11,11	16,67	33,33	16,67	22,22

Lecturers: doc. RNDr. Jana Korduláková, PhD., Mgr. Petra Chovančíková, PhD.

Last change: 28.11.2019

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI-PriF.KMB/1- BIN-311/15	Course title: Bioinformatics

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

Number of credits: 5

Recommended semester: 5.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KMB/N-bBMO-009/15

Course requirements: To complete the course, it is necessary to participate in tutorials and submit protocols from all exercises. The exam is in the form of a written test. At least 85% must be obtained for grade A, at least 75% for B, at least 70% for C, at least 65% for D and at least 60% for E. Scale of assessment (preliminary/final): 0/100

Learning outcomes: Students will gain basic knowledge in two main areas - working with biological databases and basic analysis of molecular biological data. The student will gain basic knowledge of working with database systems, especially in the field of life sciences, get acquainted with the structure of records of basic biological databases and the types of data that can be obtained from them. In the second part of the course the student will acquire basic skills in the analysis of molecular biological data (mainly DNA, RNA and protein sequences) and get acquainted with theoretical and practical aspects of analysis of their primary, secondary and tertiary structure in silico, i.e. through computer technologies.

Class syllabus: 1. Introduction to Bioinformatics: definition - history - content - internet - relation to other scientific disciplines 2. Biological databases: biological data - other data used in biology - division of biological databases - principles of work with databases. 3. Primary databases: types of primary sequences - ENA / GenBank / DDBJ - UniProt - GO - data entry - use. 4. Secondary databases: protein motifs - PROSITE - PRINTS - Pfam - BLOCKS - INTERPRO. 5. Other biological databases and integrated database systems: PDB - KEGG - OMIM - REBASE - bibliographic data - MEDLINE - integrated database systems - SRS - Entrez. 6. Analysis of biological data: collection and analysis of biological data - sequencing projects - statistical analysis - computer technology used - Staden Package - EMBOSS. 7. Identification of protein coding regions: signals - motifs - coding regions - prokaryotes vs. eukaryotes. 8. Alignments of two sequences: pairwise alignment - dot plot - substitution matrices - local and global alignments - BLAST - FASTA - Needleman-Wunsch

- Smith-Waterman. 9. Multiple sequence alignments: multiple sequence alignment - dynamic programming - progressive methods - consensus sequence - ClustalW. 10. Identification of protein motifs: protein motifs of secondary databases - neural networks - ScanProsite - Pscan - HmmPfam. 11. Molecular phylogenetic analysis: bioinformatics and evolution - phylogenetic trees - distance methods - maximum likelihood methods - parsimony methods - PHYLIP. 12. Secondary and tertiary structure of biomacromolecules: primary, secondary and tertiary structure - relationship between structure and function - 3D visualization - RasMol - MOLMOL.

Recommended literature:
Attwood, T.K., Parry-Smith, D.J., Phukan, S. Introduction to bioinformatics. Pearson Education, South Asia; 2007.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 4

A	B	C	D	E	FX
50,0	25,0	25,0	0,0	0,0	0,0

Lecturers: Mgr. Ľuboš Kľučár, PhD.

Last change: 11.03.2022

Approved by:

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KI/1-BIN-950/15	**Course title:** Bioinformatics
Number of credits: 4	
Educational level: I.	
Course requirements: Final state exam Scale of assessment (preliminary/final): 0/100	
Learning outcomes: Final state exam before graduation in the bachelor study program Bioinformatics	
Class syllabus: Fundamentals of discrete mathematics, calculus, algebra, probability and statistics. Programming. Design and analysis of efficient algorithms and data structures. Methods in bioinformatics. Fundamentals of cell biology and genetics.	
State exam syllabus:	
Languages necessary to complete the course: Slovak, English	
Last change: 11.03.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI-PriF.KGe/1-BIN-101/15	Course title: Biology

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

Number of credits: 2

Recommended semester: 1.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KGe/N-bCXX-007/15

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

Learning outcomes: Students will be familiar with the reconstruction of the main events leading from the origin of life to the present state of the biosphere. The lectures revolve around three main themes (i) life organisms extract energy from the outside environment to maintain their organization (ii) life organisms reproduce to achieve survival of the copies of their genes in the future generations (iii) phenomena (i) and (ii) are enabled by adaption of the organisms to the properties of their environment. Students will learn general biological principles on concrete examples.

Class syllabus:

Recommended literature: Heller, C., Purves, W.K., Sadava, D., Orians, G.H. (2009). Life: The Science of Biology. 9th Edition, W.H. Freeman. Campbell, N.A., Reece, J.B. (2006). Biologie, (český preklad), Computer Press. Darwin, Ch. (2006). Pôvod druhov. Kalligram

Languages necessary to complete the course: Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 48

A	B	C	D	E	FX
27,08	22,92	18,75	12,5	16,67	2,08

Lecturers: prof. RNDr. Ľubomír Tomáška, DrSc.

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAI/1-AIN-407/15	**Course title:** Brain and Mind

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

Number of credits: 3

Recommended semester: 1., 3., 5.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 154

A	B	C	D	E	FX
48,05	18,83	15,58	8,44	2,6	6,49

Lecturers: RNDr. Barbora Cimrová, PhD., doc. PhDr. Ján Rybár, PhD.

Last change: 21.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAI/1-AIN-408/15	**Course title:** Cognitive Laboratory

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

Number of credits: 2
Recommended semester: 1., 3., 5.
Educational level: I.
Prerequisites:
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:
Past grade distribution Total number of evaluated students: 54

A	B	C	D	E	FX
70,37	12,96	7,41	1,85	0,0	7,41

Lecturers: doc. PhDr. Ján Rybár, PhD.
Last change: 14.03.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-167/15	**Course title:** Computational Complexity and Computability

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
    per week: 3 / 1 **per level/semester:** 39 / 13
  Form of the course: on-site learning

Number of credits: 6

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements: homework assignments, oral exam Scale: A 90%, B 80%, C 70%, D 65%, E 60%

Learning outcomes: Student will be familiar with basic concepts and results in computational complexity and computability theory.

Class syllabus: RAM and its variants, register and Turing machines, recursive functions, computations and computability equivalence in different models. Church thesis, existence of undecidable problems. Basic complexity classes and relationships between them, existence of hard problems. NP-hardness, Cook theorem and selected important NP-complete problems, relationship between decision and optimization problems. P vs NP, different approaches to defining efficient algorithms (approximation and randomized algorithms). PSPACE-complete problems.

Recommended literature: Computational complexity : A modern approach / Sanjeev Arora, Boaz Barak. New York : Cambridge University Press, 2009 Introduction to the Theory of Computation / Michael Sipser. Boston: Thomson, 2006

Languages necessary to complete the course: Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 159

A	B	C	D	E	FX
44,65	8,81	15,09	12,58	15,09	3,77

Lecturers: doc. RNDr. Dana Pardubská, CSc.

Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-130/00	**Course title:** Computer Architecture

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

Number of credits: 5

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements:
 Final exam: both written and oral.
 Approximate grading scale: A 92%, B 84%, C 76%, D 68%, E 60%.
 More detailed information is available on the website.
 Scale of assessment (preliminary/final): 0/100

Learning outcomes:
 After completing the course, the student has a mathematical and technical knowledge necessary for understanding the operation of digital computers. It also has a basic knowledge on the internal implementation of the computer and interaction of hardware devices with the operating system.

Class syllabus:
 Positional number systems, encoding of information in computers, fixed and floating point arithmetics, Boolean functions and operators, disjunctive normal forms (DNF), minimization of DNF, implementation of basic Boolean functions by electrical circuits. Combinational circuits. Space and time complexity of circuits. Sequential circuits. RTL language, control units, design of digital systems, multiplication and division of integers. Principles and architecture of von Neumann computer. Arithmetic and logic unit, instructions, formats of instructions, address modes, instruction set. Memory: associative, virtual (paging and segmenting), cache, stack memory. Input/ output devices, the control of I/O. Processor: control and arithmetic, registers, interrupt processing, microprogramming. RISC-CISC, pipelining, parallel data processing. Architectures of selected processors.

Recommended literature:
 Tannenbaum A.: Structured computer organization, Prentice Hall, London, 1990
 Langholz G.: Elements of computer organization, Prentice Hall, London, 1990
 David Patterson, L. Hennessy Computer Organization and Desiogn RISC-V Edition: The Hardware Software Interface, Morgan Kaufmann; 2nd edition (December 31, 2020)
 Harris S. Digital Design and Computer Architecture: ARM Edition

Languages necessary to complete the course:
 slovak, english

Notes:					
Past grade distribution Total number of evaluated students: 709					
A	B	C	D	E	FX
16,22	11,71	14,53	14,25	22,71	20,59
Lecturers: doc. RNDr. Daniel Olejár, PhD., RNDr. Richard Ostertág, PhD.					
Last change: 22.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KI/1-INF-283/15	**Course title:** Computer Networks (1)

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

Number of credits: 4

Recommended semester: 4.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KI/1-INF-260/00

Course requirements:
 During semester: Exercises - practical assignments (50%), mid-term test (50%)
 Final exam: written test (at least 50% required) and oral final exam (may be waived)
 Approximate grading scale: A 90%, B 80%, C 70%, D 60%, E 50%
 Scale of assessment (preliminary/final): 40/60

Learning outcomes:
 Students will be familiar with basic terminology of computer networks and principles of their operation. They will have practical experience with usage and configuration of technologies commonly used on local networks and on the internet.

Class syllabus:
 Basic network terminology, layer models, OSI, TCP/IP
 Physical layer - cables, wireless transmission
 Data link layer - Ethernet, WiFi.
 Network layer – IP, routing, ICMP, ARP.
 Transport layer – UDP, TCP, NAT.
 Application layer – DNS, DHCP, Web, Mail, FTP, ...
 IPv6
 Security – firewall, VPN, SSL/TLS, security at the application layer (Web, Mail).

Recommended literature:
 Computer Networks / Andrew S. Tanenbaum, David J. Wetherall. Boston : Pearson education, 2011
 Computer Networks / Andrew S. Tanenbaum. Upper Saddle River : Prentice-Hall, 2003
 Data and computer communications / William Stallings. Upper Saddle River : Prentice-Hall, 2004

Languages necessary to complete the course:
 Slovak, English

Notes:					
Past grade distribution Total number of evaluated students: 1788					
A	B	C	D	E	FX
14,49	14,71	18,12	24,44	18,57	9,68
Lecturers: RNDr. Jaroslav Janáček, PhD., Ing. Dušan Bernát, PhD.					
Last change: 22.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAI/1-DAV-202/20	**Course title:** Data Management

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

Number of credits: 5

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

Antirequisites: FMFI.KI+KAI/2-INF-185/15

Course requirements:
 During semester: homework (45%), project proposal (5%).
 Durig exam period: project and oral exam (50%). Grades A: 90..100, B: 80...89, C: 70...79, D: 60...69, E: 50...59, FX: 0..49. More information on the course website.
 Scale of assessment (preliminary/final): 50/50

Learning outcomes:
 Students will be able to process large data sets with general and specialized tools. They will also be able to present the methods used and visualize the results.

Class syllabus:
 Reproducibility of computational analyses. Processing text files with UNIX tools. Basics of the Perl language. Databases and SQL. System R. Use of Python to automate data downloads and to process text data. Shared cluster computing and cloud infrastructure. Highly parallel computing tools.

Recommended literature:
 Building bioinformatics solutions : with Perl, R, and MySQL / Conrad Bessant, Ian Shadforth, Darren Oakley. Oxford : Oxford University Press, 2009
 The Data Science Design Manual / Steven S. Skiena. Springer 2017

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 109

A	B	C	D	E	FX
49,54	22,02	11,93	6,42	5,5	4,59

Lecturers: doc. Mgr. Bronislava Brejová, PhD., doc. Mgr. Tomáš Vinař, PhD., Mgr. Vladimír Boža, PhD.
Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAG+KI/1-DAV-105/20	**Course title:** Data Visualisation

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

Number of credits: 5

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI.KAI/1-AIN-130/16 - Programming (1) or FMFI.KAI/1-DAV-202/20 - Data Management or FMFI.KAI+KDMFI/1-AIN-130/22 - Programming (1)

Recommended prerequisites:
 Basic knowledge of the Python language

Course requirements:
 Practical tasks (35%), group project (45%), quizzes (10%), oral exam (10%). More information on the course website.
 Scale of assessment (preliminary/final): 90/10

Learning outcomes:
 Students will get acquainted with the basics of data visualization. They will be able to interpret graphs, draw conclusions from them. They will be able to choose the appropriate chart type for given data and create the appropriate visualization using existing Python libraries.

Class syllabus:
 Processing tabular data, data types (continuous, discrete, categorical), basic descriptive statistics (mean, median, quantiles, variance, correlation). Types of graphs for two-dimensional and multidimensional data (e.g. bar plot, pie chart, scatterplot, plotplot, histogram, parallel coordinates, contour lines, heatmaps). Dimensionality reduction methods. Display of special data types (time series, geographic data, networks and hierarchies, texts). Use of interactive elements. Human perception. Technical aspects (formats, tools). Choice of colors. Principles of data visualization, selection of a suitable type of graph, common errors in visualization. Interpretation of visualized data.

Recommended literature:
 Information visualization : Perception for design / Colin Ware. Waltham : Morgan Kaufmann, 2013
 Now you see it Simple visualization techniques for quantitative analysis / Stephen Few, Analytics Press, 2009
 Cairo: The Truthful Art: Data, Charts, and Maps for Communication. New Riders; 1st edition, 2016.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 58

A	B	C	D	E	FX
75,86	15,52	5,17	0,0	0,0	3,45

Lecturers: doc. Mgr. Bronislava Brejová, PhD., RNDr. Martina Bátorová, PhD.

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-310/00	**Course title:** Design of Efficient Algorithms

Educational activities:
  Type of activities: lecture / practicals
  Number of hours:
    per week: 3 / 1 **per level/semester:** 39 / 13
  Form of the course: on-site learning

Number of credits: 6

Recommended semester: 4.

Educational level: I.

Prerequisites: FMFI.KI/1-INF-220/00 - Algorithms and Data Structures and (FMFI.KI/1-INF-160/00 - Introduction to Combinatorics and Graph Theory or FMFI.KAI+KI/1-DAV-101/20 - Discrete Mathematics)

Course requirements:
To complete the course, it is necessary to obtain at least 70% of points during the semester. The grade is based on a final written exam and an optional oral exam.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Student will be able to apply basic methods of efficient algorithm design and to analyze time complexity of algorithms

Class syllabus:
Basic graph problems and their effective solutions (e.g. algorithms for finding the shortest paths, the minimum spanning trees, articulations and bridges in graphs)
Data structures (Union/Find-Set problem, interval trees, RMQ and LCA)
The principles of efficient algorithm design (including particular applications) (e.g. dynamic programming, greedy algorithms, balancedness and the choice of an appropriate data structure)
Algorithm for problems from other areas of informatics (e.g. string matching, convex hull, modular arithmetic)

Recommended literature:
Introduction to algorithms / Thomas H. Cormen ... [et al.]. Cambridge, Mass. : MIT Press, 2001

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 528

A	B	C	D	E	FX
43,37	21,59	14,2	10,98	7,58	2,27

Lecturers: Mgr. Michal Anderle, PhD., RNDr. Ing. František Kardoš, PhD.
Last change: 23.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3., 5.

Educational level: I., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 215

A	B	C	D	E	FX
67,44	13,02	6,51	1,86	1,4	9,77

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4., 6.

Educational level: I., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 146

A	B	C	D	E	FX
77,4	12,33	3,42	1,37	0,0	5,48

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KJP/1-MXX-131/00	**Course title:** English Language (1)

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

Number of credits: 2

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
 Grades: A 93%, B 85%, C 77%, D 70%, E 65%
 Course prerequisites:
 https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
 Scale of assessment (preliminary/final): 100/0

Learning outcomes:
 The objective of the subject is to provide the students with experience and knowledge of technical English and thus make them ready to use English sources of information for later study and professional career.

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

Recommended literature:
 Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
 The textbook has not been published. It is at students' disposal in an electronic format.
 Anglický jazyk pre študentov FMFI UK : Aplikovaná matematika / Alexandra Maďarová, Ľubomíra Kožehubová.
 The textbook has not been published. It is at students' disposal in an electronic format.
 Anglický jazyk pre študentov FMFI UK : Matematika / kolektív autorov KJP.
 The textbook has not been published. It is at students' disposal in an electronic format.
 Anglický jazyk pre študentov FMFI UK : Fyzika / Alena Zemanová.
 The textbook has not been published. It is at students' disposal in an electronic format.
 Anglický jazyk pre študentov FMFI UK : Informatika / Elena Klátiková.
 The textbook has not been published. It is at students' disposal in an electronic format.

| **Languages necessary to complete the course:** |
| Slovak, English |

| **Notes:** |

Past grade distribution
Total number of evaluated students: 5840

A	B	C	D	E	FX
30,6	23,8	18,29	12,47	7,45	7,4

Lecturers: Mgr. Eva Foltánová, Mgr. Ing. Jana Kočvarová, Mgr. Ľubomíra Koževubová, Mgr. Alexandra Maďarová, PhDr. Alena Zemanová, Mgr. Aneta Barnes, Mgr. Simona Tomášková, PhD.

Last change: 20.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KJP/1-MXX-132/00	**Course title:** English Language (2)

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

Number of credits: 2

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:
Grades: A 93%, B 85%, C 77%, D 70%, E 65%
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The objective of the subject is to provide the students with experience and knowledge of technical English and thus make them ready to use English sources of information for later study and professional career.

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

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

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 1582

A	B	C	D	E	FX
22,06	20,54	24,27	15,36	10,81	6,95

Lecturers: PhDr. Alena Zemanová, Mgr. Ing. Jana Kočvarová, Mgr. Alexandra Maďarová, Mgr. Ľubomíra Kožehubová, Mgr. Eva Foltánová, Mgr. Aneta Barnes, Mgr. Simona Tomášková, PhD.
Last change: 20.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KJP/1-MXX-231/00	**Course title:** English Language (3)

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

Number of credits: 2

Recommended semester: 3.

Educational level: I.

Prerequisites:

Course requirements:
Grades: A 93%, B 85%, C 77%, D 70%, E 65%
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The objective of the classes is to provide the students with knowledge of technical English in their field of study and experience with technical English sources sufficient to make the able to use technical language for their later study and professional purposes.

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

Recommended literature:
Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
The textbook has not been published. It is at students' disposal in an electronic format.
Anglický jazyk pre študentov FMFI UK : Aplikovaná matematika / Alexandra Maďarová, Ľubomíra Koževhubová.
The textbook has not been published. It is at students' disposal in an electronic format.
Anglický jazyk pre študentov FMFI UK : Matematika / kolektív autorov KJP.
The textbook has not been published. It is at students' disposal in an electronic format.
Anglický jazyk pre študentov FMFI UK : Fyzika / Alena Zemanová.
The textbook has not been published. It is at students' disposal in an electronic format.
Anglický jazyk pre študentov FMFI UK : Informatika / Elena Klátiková.
The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:

Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1326

A	B	C	D	E	FX
16,06	19,53	23,23	18,1	17,5	5,58

Lecturers: PhDr. Alena Zemanová, Mgr. Ing. Jana Kočvarová, Mgr. Alexandra Maďarová, Mgr. Ľubomíra Koževhubová, Mgr. Eva Foltánová, Mgr. Aneta Barnes, Mgr. Simona Tomášková, PhD.

Last change: 20.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KJP/1-MXX-232/10	**Course title:** English Language (4)

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

Number of credits: 2

Recommended semester: 4.

Educational level: I.

Prerequisites:

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

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

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

Recommended literature:
 Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
 The textbook has not been published. It is at students' disposal in an electronic format.
 Anglický jazyk pre študentov FMFI UK : Aplikovaná matematika / Alexandra Maďarová, Ľubomíra Kožehubová.
 The textbook has not been published. It is at students' disposal in an electronic format.
 Anglický jazyk pre študentov FMFI UK : Matematika / kolektív autorov KJP.
 The textbook has not been published. It is at students' disposal in an electronic format.
 Anglický jazyk pre študentov FMFI UK : Fyzika / Alena Zemanová.
 The textbook has not been published. It is at students' disposal in an electronic format.
 Anglický jazyk pre študentov FMFI UK : Informatika / Elena Klátiková.
 The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:
 Slovak, English

Notes:					
Past grade distribution Total number of evaluated students: 3345					
A	B	C	D	E	FX
27,23	28,4	21,29	11,21	5,77	6,1
Lecturers: Mgr. Ing. Jana Kočvarová, Mgr. Alexandra Maďarová, PhDr. Alena Zemanová, Mgr. Ľubomíra Koževhubová, Mgr. Eva Foltánová, Mgr. Aneta Barnes, Mgr. Simona Tomášková, PhD.					
Last change: 17.06.2022					
Approved by:					

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI-PriF.KBCh/1-BIN-303/15	**Course title:** Essential Cell Biology

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

Number of credits: 5

Recommended semester: 5.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KBCh/N-bCBI-020/16

Course requirements:
There will be 10-12 written examinations during the semester. Credits will not be awarded to a student who obtains less than 50% of the overall evaluation of the written tests. The course will be completed in the form of an oral exam. The evaluation will be given as follows: A - excellent results, B - above-average work, C - normal reliable work, D - acceptable results, E - results meeting the minimum criteria, Fx - insufficient results.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course, students will have an overview of the internal organization of prokaryotic and eukaryotic cells and the basic biological processes that take place in individual cell compartments. Emphasis is placed on the importance of biological membranes, intracellular compartmentalization and key molecular processes operating in cells.

Class syllabus:
Complex organization of eukaryotic cell. History and key discoveries of cell biology. Characteristic properties of eukaryotic cells. Comparison of ultrastructure of prokaryotic and eukaryotic cells. Importance of intracellular compartmentalization. The origin of the eukaryotic cell.
The role of biological membranes in the eukaryotic cell. Membrane structure and function. Membrane transport. Vector processes bound to membranes. The role of membranes in nerve signal transmission.
Cell nucleus. Ultrastructure and dynamics of the cell nucleus, nuclear membrane, nuclear pores, nucleolus. Chromosomes and chromosomal territories. Histones and histone-like proteins. Eukaryotic genome dynamics. Genome replication and repair.
Transcription and principles of gene expression control. Levels of gene expression control in prokaryotic and eukaryotic cells. Transcriptional control and post-transcriptional RNA processing.

Ribosome translation and function. Ribosome subunits. Ribosomal RNA and protein components of the ribosome. Basic steps in the regulation of proteosynthesis. Intracellular localization of proteosynthesis. Protein distribution in the cell. Posttranslational fate of proteins.

Mitochondria and chloroplasts. Ultrastructure and function of semiautonomous organelles. Specific roles of mitochondrial and chloroplast membranes. Organelle genomes. Oxidative phosphorylation. Photosynthesis-photophosphorylation.

Endoplasmic reticulum, Golgi apparatus. Structure and function. Smooth and rough endoplasmic reticulum, sarcoplasmic reticulum.

Vesicular transport. Role in protein distribution and transport in eukaryotic cells. Vacuoles, lysosomes and peroxisomes. Structure, function, biogenesis and distribution. Metabolism. Clinical significance of lysosomes and peroxisomes.

Cytoskeleton as a dynamic structure. Cytoskeletal components. Cytoskeleton as a motive system: vesicular transport, cell motility and cell division.

Cell surfaces. Cytoplasmic membrane and cell wall. Extracellular matrix. From individual cells to tissues and multicellular organisms.

Cells in a social context. Biofilms. Cells as part of tissues. Epithelium and intercellular connections. Quorum sensing. Intercellular communication and cell death.

Recommended literature:
Alberts B., Johnson A., Lewis J., Raff M., Roberts K., Walter P. (2014) Molecular Biology of the Cell, Garland Science.
Alberts B. a kol. (2014) Essential Cell Biology, 5th edition, W. W. Norton & Company.
Lodish a kol. (2016) Molecular Cell Biology. 8th edition, W. H. Freeman and Company.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 16

A	B	C	D	E	FX
43,75	6,25	18,75	12,5	18,75	0,0

Lecturers: prof. RNDr. Jozef Nosek, DrSc., doc. Mgr. Peter Polčic, PhD.

Last change: 11.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI-PriF.KGe+KZ +KBCh/1-BIN-302/15	**Course title:** Evolutionary Biology (1)

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

Number of credits: 3

Recommended semester: 5.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KGe/N-bBUB-003/15

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

Learning outcomes:
The students will get an overview of the hypotheses and theories of biological evolution, with emphasis on the latest knowledge and opinions in this field, and on the evidence of the process of evolution. They will be familiar with the main factors and mechanisms of the evolutionary process. They will be acquainted with details of synthetic evolutionary theory (neo-darwinism) and the fundamentals of population genetics as the basis of this theory. The course also covers the evolution of the genetic apparatus of cells, genes and genomes, the contemporary views on the question of the origin of life, on the origin and evolution of cells with emphasis on the eukaryotic cell. An overview of methods of phylogeny analysis will be also provided.

Class syllabus:

Recommended literature:
 Flegr J.: Úvod do evoluční biologie, Academia, Praha 2007
 Flegr J.: Evoluční biologie, Academia, Praha 2005
 Mayr E.: Čo je to evolúcia, aktuálny pohľad na evolučnú biológiu, Kalligram, Bratislava 2004
 Larson E.J.: Evolúcia, neobyčajná história jednej vedeckej teórie, Slovart, Bratislava 2006
 Lane N.: Vývoj života – Deset velkých vynálezů evoluce. Kniha Zlín 2011.

Languages necessary to complete the course:
 Slovak, English

Notes:

| **Past grade distribution** | | | | | |
| Total number of evaluated students: 19 | | | | | |
A	B	C	D	E	FX
15,79	15,79	21,05	15,79	26,32	5,26

Lecturers: doc. Mgr. Peter Vďačný, PhD., doc. Mgr. Peter Mikulíček, PhD., prof. RNDr. Ľubomír Tomáška, DrSc., RNDr. Regina Sepšiová, PhD., doc. RNDr. Marek Mentel, PhD., RNDr. Ján Radvánszky, PhD.

Last change: 09.02.2018

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI-PriF.KGe/1-BIN-211/15	**Course title:** Evolutionary Biology (2)

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

Number of credits: 3

Recommended semester: 6.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KEk/N-bBXX-031/15

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: doc. Mgr. Monika Okuliarová, PhD., RNDr. Ján Radvánszky, PhD., doc. Mgr. Viktor Demko, PhD., Mgr. Andrej Čerňanský, PhD.

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-215/14	**Course title:** Formal Languages and Automata (1)

Educational activities: **Type of activities:** lecture / practicals **Number of hours:**   **per week:** 3 / 2 **per level/semester:** 39 / 26 **Form of the course:** on-site learning

Number of credits: 6

Recommended semester: 3.

Educational level: I.

Prerequisites:

Course requirements: homework, test, written and oral final exam Scale of assessment (preliminary/final): 30/70

Learning outcomes: Students will be familiar with basic models of automata and grammars, and they will be ale to compare their computational power. They will understand algorithmic problem (un)decidability and a formal definition of computational complexity of a problem.

Class syllabus: Chomsky hierarchy of formal grammars. Finite state automata and pushdown automata. Basic properties of regular and context-free languages, regular expressions. Turing machines. Undecidable problems. Introduction to computational complexity theory.

Recommended literature: The Mathematical theory of context free languages / Seymour Ginsburg. New York : McGraw Hill, 1966 Formálne jazyky a automaty / John E. Hopcroft, Jeffrey D. Ullmanm ; preložili Branislav Rovan, Peter Mikulecký. Bratislava : Alfa, 1978 Introduction to Automata Theory, Languages, and Computation / John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman. Boston : Pearson/Addison-Wesley, 2007

Languages necessary to complete the course: Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 584

A	B	C	D	E	FX
21,06	4,97	4,11	20,55	32,88	16,44

Lecturers: prof. RNDr. Branislav Rovan, PhD., RNDr. Šimon Sádovský, PhD., Mgr. Lukáš Kiss

Last change: 08.02.2018
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 435

A	B	C	D	E	FX
45,75	20,0	18,85	8,74	2,3	4,37

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 265

A	B	C	D	E	FX
38,87	25,28	19,62	10,19	2,64	3,4

Lecturers: Mgr. Ľubomíra Koehubová

Last change: 20.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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: 26 **Form of the course:** on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution Total number of evaluated students: 104

A	B	C	D	E	FX
39,42	27,88	21,15	6,73	0,96	3,85

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution   Total number of evaluated students: 74

A	B	C	D	E	FX
41,89	32,43	17,57	2,7	1,35	4,05

Lecturers: Mgr. Ľubomíra Ko-ehubová

Last change: 20.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI-PriF.KGe/1-BIN-113/15	**Course title:** General Biology

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

Number of credits: 3

Recommended semester: 2.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KGe/N-bCXX-008/15

Course requirements:
The course will be evaluated on the basis of the final test results from questions from topics covered during the semester. (max 25 points). Completion of the course is necessary to obtain a minimum of 50% of points. For certain types of activities in lectures (e.g. gaining the full number of points from voluntary tests during the semester) it will be possible to get bonus points for the final test. Rating scale: 61-67% = E; 68-75% = D; 76-84% = C; 85-93% = B; 94-100% = A. The course will take place on-site. In the case of a situation that does not allow the on-site form, the teacher decides on the method of online teaching.
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The course will deal with the basic characteristics of life and the formulation of principles that apply to all living organisms. The possibilities provided by mathematics, computer science and chemistry for the study of biological phenomena will be identified. It is therefore suitable for students of biological, chemical, mathematics and computer science. The course is largely based on Theodosius Dobzhansky's thesis: "Nothing in biology that is not in the light of evolution makes sense." Students will be able to apply this principle when answering questions about the functioning of biological systems.

Class syllabus:
The general-biological principles will be presented through the following topics: (1) Basic concepts of modern biology; (2) Why are not living organisms immortal; (3) Stochastic processes in biology; (4) Robustness in biology; (5) Introduction to synthetic biology; (6) How do cells form coordinated communities?; (7) Parasite evolutionary strategies; (8) Importance and nature of regulations in biological systems; (9) Cooperative behavior and altruism.

Recommended literature:
Campbell, N.A., Reece, J.B. (2006). Biologie, (český preklad), Computer Press.
Darwin, Ch. (2016). O pôvode druhov. Citadella.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 32

A	B	C	D	E	FX
46,88	21,88	25,0	3,13	3,13	0,0

Lecturers: prof. RNDr. Ľubomír Tomáška, DrSc.

Last change: 14.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI-PriF.KAgCh/1-BIN-103/15	**Course title:** General and Inorganic Chemistry

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

Number of credits: 5

Recommended semester: 1.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KAgCh/N-bBXX-018/15

Course requirements:
 Tests, final written exam
 Scale of assessment (preliminary/final): 40/60

Learning outcomes:
 The students will be familiar with basic chemical terminology from general and inorganic chemistry. During laboratory exercises students will acquire skills in basic laboratory tasks, preparation of solutions by dilution and mixing, and in the demonstration reactions of selected ions.

Class syllabus:

Recommended literature:
 Fajnor, V. a i.: Všeobecná a anorganická chémia pre biológov. 1. vyd. Bratislava : Univerzita Komenského, 2011.
 Galamboš, M. a i.: Názvoslovie anorganických látok. 2. oprav. a rozš. vyd. Bratislava : Univerzita Komenského, 2011.
 Tatiersky, J.: Základné chemické výpočty. 2. vyd. Bratislava : Univerzita Komenského, 2013.
 Fajnor, V. a i.: Cvičenia z anorganickej chémie pre biológov. 2. vyd. Bratislava : Univerzita Komenského, 2003.

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 28

A	B	C	D	E	FX
3,57	10,71	14,29	14,29	14,29	42,86

Lecturers: doc. RNDr. Milan Drábik, CSc., doc. RNDr. Jozef Tatiersky, PhD., RNDr. Jana Chrappová, PhD.
Last change: 09.02.2018
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-BIN-315/17	**Course title:** Generic Subject in Bioinformatics

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

Number of credits: 6

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements: Course requirements are determined by the hosting university abroad.

Learning outcomes: Students will complete a course related to bioinformatics at a university abroad. This will allow them to acquire new skills in this area, establish new professional contacts and to improve their communication skills.

Class syllabus: This course is intended only for students who participate in a study exchange program at a university abroad, and complete at least one course related to bioinformatics during their exchange stay. The choice of the course has to be approved by the guarantor of the study program. The course requirements are determined by the hosting university abroad.

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: doc. Mgr. Bronislava Brejová, PhD.

Last change: 04.05.2017

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI-PriF.KGe/1-BIN-201/15	**Course title:** Genetics (1)

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

Number of credits: 8

Recommended semester: 3.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KGe/N-bBXX-038/15

Course requirements:
 Tests, final written exam
 Scale of assessment (preliminary/final): 20/80

Learning outcomes:
 Students will be familiar with fundamentals of classical genetics, cytogenetics, molecular foundations of inheritance, mutation mechanisms, population and quantitative genetics, methods in genetics, genetic basis of cancer and ontogenesis, extranuclear inheritance, current whole-genome analyses and their implications for evolutionary biology and medicine.

Class syllabus:

Recommended literature:
 Snustad, D.P., Simmons, M.J. (2009). Principles of Genetics
 Hartwell, L.H., Hood, L., Goldberg, M.L., Reynolds, A.E., Silver, L.M., Veres, R.C. (2008). Genetics: From Genes to Genomes. 3rd Edition. McGraw-Hill, International Edition.
 Russell, P.J. (2006). iGenetics: A Molecular Approach. 2nd Edition. Pearson/Benjamin Cummings. International Edition.

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 29

A	B	C	D	E	FX
10,34	3,45	20,69	37,93	24,14	3,45

Lecturers: prof. RNDr. Ľubomír Tomáška, DrSc., doc. RNDr. Eliška Gálová, PhD., doc. RNDr. Andrea Ševčovičová, PhD., doc. Mgr. Miroslava Slaninová, Dr., RNDr. Regina Sepšiová, PhD.,

Mgr. Katarína Gaplovská, PhD., Mgr. Lucia Mentelová, PhD., Mgr. Katarína Procházková, PhD., Mgr. Stanislav Kyzek, PhD., Mgr. Filip Brázdovič, PhD.
Last change: 08.02.2018
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI-PriF.KGe/1-BIN-312/15	Course title: Genetics (2): Model Organisms

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

Number of credits: 5

Recommended semester: 5.

Educational level: I.

Prerequisites: FMFI-PriF.KGe/1-BIN-201/22 - Genetics (1)

Antirequisites: PriF.KGe/N-bBGE-006/15

Course requirements: The condition for passing the course is the completion of the practicals and written tests. The evaluation of the practicals, including the results tests and evaluation of protocols, will represent a maximum of 20% of the grade. The rest of the grade is based on the final written test, composed of questions from the topics listed in the brief course syllabus. To complete the course, it is necessary to obtain at least 60%. The evaluation will be given as follows: A: 100-92%, B: 91-84%, C: 83-76%, D: 75-68%, E: 67-60%. Credits will not be awarded to a student who earns less than 60%. Scale of assessment (preliminary/final): 20/80

Learning outcomes: Students will gain general knowledge and overview of model organisms and their use in basic and applied research in genetics and related fields. Lectures will focus on the main models from prokaryotic and eukaryotic microorganisms, through plants, animals, to cell cultures. In practicals, students will learn selected genetic and molecular genetic methods used in working with selected model organisms.

Class syllabus: 1. Bacteria Bacillus subtilis, Escherichia coli and Caulobacter cresentus are internationally recognized model organisms whose physiology, biochemistry and genetics have been studied for several decades. These bacteria are used to understand the basic cellular processes at the molecular level. The lecture should clarify how these processes are regulated and answer questions such as: 1. How can bacteria find their center where they build a division septum? 2. Why do single-cell organisms have systems to activate their own death? 3. How and why can bacteria differentiate? 4. How do bacterial cells form and maintain a certain shape? State-of-the-art methodologies of molecular biology, biochemistry, structural biology and microscopy are currently used to investigate these mechanisms, and many of them have been developed to study these processes. 2. Yeast

Yeast properties - advantages and disadvantages in comparison with other model organisms. Explanation of the use on examples from experimental work. The importance of yeast as a model organism in the past and prospects for the future.

3. Riasa Chlamydomonas reinhardtii

Elements of C. reinhardtii as a model object - tetrad analysis as a basis of classical genetic analysis, specific cell cycle, first algae included in a genome project, known sequences of the nuclear, chloroplast and mitochondrial genome. Comparative phylogenome analysis - the last common ancestor of plants and animals. Model for the study of photosynthesis, identification of chloroplast and flagella genes, study of flagellum structure and assembly, cell wall biogenesis, gametogenesis, maiting, phototaxy. Creating a complex EST (expressed sequence tags) library.

4. Trypanosomatides

Trypanosomatides are a large group of parasitic protozoa, many of which are important pathogens in plants, animals and humans. They belong to one of the earliest separating eukaryotes. Long independent development is probably responsible for a large number of extraordinary metabolic pathways, which make trypanosomatids a very interesting model for studying the diversity of the living world.

5. Genetics of Drosophila melanogaster

Genetics of Drosophila melanogaster - life cycle, genome, balancer chromosomes, phenotypic markers. Mobile elements and their use in transgenesis and the creation of transgenic individuals, Drosophila genome project, characterization of selected developmental stages and organs as model systems for the study of various biological processes or diseases.

6. Silkworm (Bombyx mori)

Transgenic and molecular procedures in functional analysis of genes - identification of genes encoding bioactive substances and their receptors. Study of gene expression by qRT-PCR, in situ hybridization and immunohistochemistry. In vitro characterization of receptors by bioluminescence method in CHO cells. Use of baculovirus expression system (Bac-to-Bac) for targeted expression of markers, toxins and receptors in specific cells. Use of transgenic techniques with the piggyBac transposomal element and the Gal4 / UAS system for functional analysis of specific organs, cells and bioactive substances in vivo and in vitro. Use of the CRISPR / Cas9 system for targeted mutation and manipulation of receptor genes. Ca2 + imaging for monitoring the activity of neurons and endocrine cells in vitro.

7. House mouse (Mus musculus)

History of M. musculus as a model organism; wild, inbred, outbred and recombinant mouse strains, selected inbred strains and their properties, transgenic mice, mouse models of human diseases, genetically and genomically humanized mouse models, whole genome association studies.

8. Cell cultures and other in vitro systems

Definition, basic types and division of BK. Basics of working with BK (principles of sterile work, culture media, dissociation enzymes, cell counting, staining). Special types of BK (stem cells, hybridomas, 3D cultures, spheroids, organoids). Examples and applications in clinical and applied research and in practice.

9. Plants as a model organism

The importance of plants for the study of molecular genetic processes. Plant cell specifics. Arabidopsis thaliana as a model organism in plant genetics, relationships between nuclear and chloroplast DNA.

10. Plant and environment

Plant response to abiotic and biotic types of stress. Stress proteins - structure and function. Arabidopsis thaliana - regulation of gene expression in higher plants under stress conditions.

11. The most important cultivated plants as genetic models

Genetic determination of the most important properties of selected crops (wheat, barley, maize, beet, potato, oilseed rape, edible tomato, etc.), genetic peculiarities and interesting facts of these crops. Male sterility genes, plant fertility restoration genes. Molecular mechanisms of male sterility. Practical use of the phenomenon of male sterility.

12. Cultivated plants as a model of genotype incompatibility studies

Genetic mechanisms of inbreeding prevention. Gametophytic and sporophytic incompatibility, their genetic determination, molecular principles. Practical significance of the incompatibility phenomenon.

Recommended literature:

Russell, P.J. (2010) iGenetics. A molecular approach. 3rd. edition. Pearson Education Inc. USA
Hartwell, L.H., Hood, L., Goldberg, M.L., Reynolds, A.E., Silver, L.M., Veres, R.C. (2008). Genetics: From Genes to Genomes. 3rd Edition. McGraw-Hill, International Edition.
Snustad, D.P. (2009) Genetika, Masarykova Univerzita, , K-public, Česká republika
odborná literatúra podľa odporúčania jednotlivých vyučujúcich

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1

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

Lecturers: RNDr. Imrich Barák, DrSc., doc. RNDr. Eliška Gálová, PhD., prof. RNDr. Anton Horváth, CSc., doc. Mgr. Miroslava Slaninová, Dr., doc. RNDr. Vladimíra Džugasová, PhD., RNDr. Miroslava Matúšková, PhD., Mgr. Lucia Mentelová, PhD., RNDr. Dušan Žitňan, DrSc., Mgr. Stanislav Kyzek, PhD.

Last change: 11.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI-PriF.KGe/1-BIN-313/15	Course title: Genetics (3): Cytogenetics

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

Number of credits: 5

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI-PriF.KGe/1-BIN-201/22 - Genetics (1)

Antirequisites: PriF.KGe/N-bBGE-004/15

Course requirements:
 Grades will be based on participation in laboratory practice, which are mandatory and final exam in the form of written test. For the completion of the laboratory practice is necessary to obtain at least 60% from final credit test. Overall rating from Laboratory practice constitutes 20% of the final grade.
 Final exam is in form of written test. The course has a standardized grading system (overall rating from Laboratory practice and final exam):
 Grade A (92 – 100%), B (85 – 91%), C (77 – 84%), D (69 – 76%), E (60– 68%)
 Scale of assessment (preliminary/final): 20/80

Learning outcomes:
 Completing the course the student acquires the knowledge about cell nucleus, mitosis and meiotic cell division, chromosome structure in different models, cell cycle and chromosome aberrations. Further, the latest methods in molecular cytogenetics will be also discussed.

Class syllabus:
 Cell nucleus and its compartments, structure and function: nuclear membrane, nucleolus, nuclear bodies (PcG, PML, OPT, SNB etc.)
 Chromosome structure (different models: human, insect, yeast), microscopy of chromosomes, composition – chromosome scaffold and nucleosomes, different chromosome models, heterochromatin, euchromatin, gene silencing, DNA methylation and CpG islands
 Cell cycle, cell nucleus changes, cell cycle phases, cell cycle regulation (cyclin dependent kinases, cyclins, DNA damage)
 Mitosis – G1, S, G2 and M phase (sub-phases), cytokinesis and immortal cells
 Meiosis – I. and II. meiotic cell division, cytokinesis, male and female meiosis, chromosome nondisjunction, plant meiosis
 Chromosome aberrations, (characterization and classification), evaluation of chromosome defects, meiosis of polyploid organisms, mechanisms leading to chromosome aberrations
 Fluorescent microscopy–basic principles and applications

Confocal microscopy and latest microscopy methods
Molecular cytogenetics/pathology, cytogenetics methods, cancer cytogenetics and diagnostics

Recommended literature:
Snustadt, D.P., Simmons, M.J. (2009). Genetika. MUNI Press, Masarykova univerzita, Brno.
Hartwell, L.H., Hood, L., Goldberg, M.L., Reynolds, A.E., Silver, L.M., Veres, R.C. (2008). Genetics: From Genes to Genomes. 3rd Edition. McGraw-Hill, International Edition.
Russell, P.J. (2006). iGenetics: A Molecular Approach. 2nd Edition. Pearson/Benjamin Cummings. International Edition.
Morgan D. O. (2006). The Cell Cycle: Principles of Control. OUP/New Science Press Primers in Biology

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 0

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

Lecturers: doc. RNDr. Andrea Ševčovičová, PhD., doc. Mgr. Miroslava Slaninová, Dr., doc. RNDr. Eliška Gálová, PhD., Mgr. Katarína Gaplovská, PhD.

Last change: 14.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
 Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 734

A	B	C	D	E	FX
36,1	27,25	19,62	8,99	2,72	5,31

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

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 480

A	B	C	D	E	FX
36,04	20,21	20,83	13,13	3,33	6,46

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

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University 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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 165

A	B	C	D	E	FX
41,21	25,45	20,61	6,67	2,42	3,64

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

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 90

A	B	C	D	E	FX
42,22	24,44	12,22	12,22	3,33	5,56

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

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAI/1-MXX-491/15	**Course title:** Integrated Education of People with Disabilities

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

Number of credits: 3

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 55

A	B	C	D	E	FX
78,18	18,18	1,82	0,0	0,0	1,82

Lecturers: PaedDr. Elena Mendelová, CSc.

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-160/00	**Course title:** Introduction to Combinatorics and Graph Theory

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

Number of credits: 6

Recommended semester: 2.

Educational level: I.

Prerequisites: FMFI.KI/1-INF-120/00 - Introduction to Discrete Structures

Course requirements:
 test, homework, final exam
 Scale of assessment (preliminary/final): 40/60

Learning outcomes:
 Students will be fmailiar with basic terminology, results, methods and algorithms from graph theory and combinatorics.

Class syllabus:
 Combinatorics: basic types of combinatorial problems and basic notions. Permutations, variations, combinations. Pascal formula, binomial and polynomial theorem. Combinatorial identities, estatimations of combinatorial numbers. Inclusion/exclusion principle. Recurrence relations, generating functions. Summation methods. Graph theory: motivation problems. Definition of various types of graphs. Basic notions. Trees. Searching of graphs. Euler path, Hamiltonian cycles. Graph colouring. Planar graphs. Algorithms for finding the the minimum spanning tree.

Recommended literature:
 Diskrétna matematika 1 : Úvod do teórie množín, teórie booleovských funkcií a matematickej logiky / Daniel Olejár, Škoviera Martin. Bratislava : Univerzita Komenského, 1992
 Matoušek, Nešetřil, Kapitoly z diskétní matematiky, Praha, Karolinum, 2010. M-ALG-M-5ab

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 532

A	B	C	D	E	FX
22,37	10,15	25,94	23,68	14,66	3,2

Lecturers: doc. RNDr. Edita Mačajová, PhD., Mgr. Jozef Rajník

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KI/1-INF-230/00	**Course title:** Introduction to Database Systems

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

Number of credits: 5

Recommended semester: 5.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KAI/1-AIN-221/15 and FMFI.KAI/1-AIN-222/15

Course requirements: homeworks, final exam The evaluation is governed by the education quality system of Comenius University. Scale of assessment (preliminary/final): 50/50

Learning outcomes: The students will get acquainted with application and implementation of database systems. They will learn to use query languages and design relational databases. They will learn the principles of transaction systems.

Class syllabus: Data models, DBMS architecture, reality modeling, relational model, declarative query languages, relational algebra, relational database design theory (functional dependencies, keys, normal forms), transactions and transaction processing, data structures for multilevel memory.

Recommended literature: S. Abiteboul, R. Hull, V. Vianu. Reading: Foundations of databases, Pearson Education, 1994 H. Garcia-Molina, J. D. Ullman, J. Widom: Database systems, The complete book. Prentice-Hall, 2008

Languages necessary to complete the course: Slovak, English

Notes: The lecture and exercises are complemented by the course Database Practicum, focused on gaining practical skills in working with databases.

Past grade distribution Total number of evaluated students: 790

A	B	C	D	E	FX
17,22	10,89	15,82	12,66	17,85	25,57

Lecturers: doc. Mgr. Tomáš Plachetka, Dr., doc. RNDr. Ján Mazák, PhD.
Last change: 23.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-120/00	**Course title:** Introduction to Discrete Structures

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

Number of credits: 5

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
 test, written final exam
 Scale of assessment (preliminary/final): 30/70

Learning outcomes:
 Students will be familiar with logical structure of mathematics, methods of mathematical proofs and discrete structures necessary for study of mathematics and informatics.

Class syllabus:
 Propositional calculus. Quantified propositions. Mathematical proofs. Mathematical induction. Intuitive set theory and its paradoxes. Basic set relations and operations on sets. Sets cardinality. Finite, infinite, countable and uncountable sets.

Recommended literature:
 Diskrétna matematika 1 : Úvod do teórie množín, teórie booleovských funkcií a matematickej logiky / Daniel Olejár, Škoviera Martin. Bratislava : Univerzita Komenského, 1992
 Teória množín / Tibor Šalát, Jaroslav Smítal. Bratislava : Univerzita Komenského, 1995
 Množiny a všeličo okolo nich / Lev Bukovský. Košice : Univerzita Pavla Jozefa Šafárika, 2005

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 667

A	B	C	D	E	FX
21,29	11,24	16,34	16,19	22,34	12,59

Lecturers: prof. RNDr. Martin Škoviera, PhD., Mgr. Jozef Rajník, Mgr. Adrián Goga, Mgr. Lukáš Kiss

Last change: 08.02.2018

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KI/1-INF-210/21	**Course title:** Introduction to Mathematical Logic

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

Number of credits: 7

Recommended semester: 4.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KI/1-INF-210/00

Course requirements:

Learning outcomes:

Class syllabus:
Language, semantics and syntax of propositional calculus. Compactness theorems. Axioms and deductive rules. Basic theorems of propositional calculus. Post theorems. Consistency and completness of propositional calculus. Language, axioms and deductive rules of predicate calculus. Deduction theorem. Basic theorems of predicate calculus. Compactness and consistency of predicate calculus.
Axioms of equality and theories with equality. Expressing mathematical statments by formulas of predicate calculus.

Recommended literature:
Mendelson E. Introduction to Mathematical Logic. Chapman & Hall, London, 4th edition, 1997.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 779

A	B	C	D	E	FX
17,07	10,53	12,45	13,48	34,02	12,45

Lecturers: doc. RNDr. Robert Lukoťka, PhD., doc. RNDr. Ján Mazák, PhD.

Last change: 15.05.2021

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KDMFI/1-AIN-112/15	**Course title:** Introduction to Web Technologies

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

Number of credits: 6

Recommended semester: 1.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KZVI/1-AIN-610/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 2357

A	B	C	D	E	FX
41,54	14,55	13,58	11,41	8,53	10,39

Lecturers: PaedDr. Roman Hrušecký, PhD., RNDr. Marek Nagy, PhD.

Last change: 22.09.2017

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI-PriF.KGe/1-BIN-212/15	**Course title:** Lab Math

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

Number of credits: 2

Recommended semester: 4.

Educational level: I.

Prerequisites:

Antirequisites: PriF.KGe/N-bBGE-003/15

Course requirements:
Course requirements: (i) attendance at seminars, (ii) a written test. At least 60% of points must be obtained in the test. The remainder is divided into 5 intervals corresponding to the A-E rating (60-68% = E; 69-76% = D; 77-84% = C; 85-92% = B; 92-100% = A)
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
The aim of the seminar is:
(i) to teach students to do calculations for work in a molecular genetics laboratory,
(ii) practice solving more complex problems from genetics,
(iii) to teach students to statistically process and interpret the results of experimental work.

Class syllabus:
During the seminar, the students will solve:
tasks they will encounter in their work in the molecular genetics laboratory (preparation of solutions, dilution of primers, etc.);
problems aimed at evaluating the results of tetrad analysis and calculating the linkage distances between genes;
problems focused on statistical evaluation of experiments.

Recommended literature:
Snustadt, D.P., Simmons, M.J. (2009). Genetika. MUNI Press, Masarykova univerzita, Brno.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution

Total number of evaluated students: 6

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

Lecturers: doc. RNDr. Eliška Gálová, PhD., doc. RNDr. Andrea Ševčovičová, PhD., Mgr. Katarína Juríková, PhD., Mgr. Mária Peťková, Mgr. Terézia Zajičková, Mgr. Ivana Ďurovcová, PhD.

Last change: 12.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI-Prif.KAgCh/1-BIN-106/19	**Course title:** Laboratory Practicals (1)

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

Number of credits: 2

Recommended semester: 1.

Educational level: I.

Prerequisites:

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

Learning outcomes:
During laboratory exercises students will acquire skills in basic laboratory tasks, preparation of solutions by dilution and mixing, and in the demonstration reactions of selected ions.

Class syllabus:
Basic laboratory equipment and operations. Purification by recrystallization. Controling the rate of chemical reactions. Preparation of solutions by dilution and mixing. Demonstration reactions of selected inorganic cations and anions. Determination of equivalence point of neutralization reactions. Determination of unknown sulfuric acid solution concentration. Hydrolysis of salts. Preparation of $KHSO_4$ (acid-base reaction).

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 30

A	B	C	D	E	FX
36,67	6,67	16,67	20,0	3,33	16,67

Lecturers: doc. RNDr. Jozef Tatiersky, PhD., RNDr. Jana Chrappová, PhD.

Last change: 06.05.2019

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI-Prif.KBCh/1- BIN-107/19	**Course title:** Laboratory Practicals (2)

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

Number of credits: 2

Recommended semester: 2.

Educational level: I.

Prerequisites: FMFI-Prif.KAgCh/1-BIN-106/19 - Laboratory Practicals (1) and FMFI.KJFB/2-FBF-107/15 - Organic Chemistry and Biochemistry

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

Learning outcomes:
 The students will gain practical laboratory experience with basic biochemical methods.

Class syllabus:
 1. Physicochemical properties of amino acids. Acidobasic properties of amino acids and peptides. Determination of isoelectric point of casein. Evidence reactions for proteins and amino acids (biuret, ninhydrin, xanthoproteic reaction).
 2. Protein properties - Hemoglobin and its gel filtration.
 3. Carbohydrates. Evidence reactions of reducing and non-reducing carbohydrates. Thin layer chromatography of mono- and disaccharides.
 4. Lipids. Determination of cholesterol content in egg yolk.
 5. Enzymology. Determination of pH optima and temperature optima of amylase from saliva.

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	6,67	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Jana Korduláková, PhD., Mgr. Petra Chovančíková, PhD.

Last change: 06.05.2019

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAI/1-AIN-406/15	**Course title:** Language and Cognition

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

Number of credits: 3
Recommended semester: 2., 4., 6.
Educational level: I.
Prerequisites:
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:
Past grade distribution Total number of evaluated students: 111

A	B	C	D	E	FX
31,53	25,23	17,12	12,61	6,31	7,21

Lecturers: doc. PhDr. Ján Rybár, PhD.
Last change: 12.01.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAI/1-AIN-510/15	**Course title:** Linux - Principles and Means

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

Number of credits: 3

Recommended semester: 3.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KAI/1-AIN-510/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 1033

A	B	C	D	E	FX
52,57	15,78	11,62	7,94	6,97	5,13

Lecturers: RNDr. Marek Nagy, PhD., Mgr. Ján Kľuka, PhD.

Last change: 22.09.2017

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAI/1-AIN-500/00	**Course title:** Linux for Users

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

Number of credits: 2

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:
The aim of the course is to acquire skills to work on the command line of Linux operating system. The course is designed not only for beginners.

Class syllabus:
Text console
Directories and files
Users, groups, redirection and searching
Atributes of files and directories
Text editor vim
Sorting and selecting
Finding
Processes
sed - stream editor
awk
bash scripts

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1670

A	B	C	D	E	FX
43,65	15,45	13,53	10,24	11,26	5,87

Lecturers: RNDr. Marek Nagy, PhD.

Last change: 22.09.2017

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 5

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
4 tests, written and oral final exam
Scale of assessment (preliminary/final): 55/45

Learning outcomes:
Students will be able to use basic tools of differential calculus of real-valued functions of a single variable to solve both practical and theoretical problems of appropriate difficulty.

Class syllabus:
Brief historical overview. Limit of a function and a sequence, basic theorems on limits. . Continuity of a function at a point and on a set, properties of continuous functions on intervals and on compact sets. Derivatives of functions, basic theorems on differentiable functions, chain rule, derivative of an inverse function. Mean value theorem. Sketching a graph of a function. L'Hospital's rule. Taylor polynomials.

Recommended literature:
Matematická analýza I / Tibor Neubrunn, Jozef Vencko. Bratislava : Univerzita Komenského, 1992
Cvičenia z matematickej analýzy I / Zbyněk Kubáček, Ján Valášek. Bratislava : Univerzita Komenského, 2009
Matematická analýza 1 / Jiří Brabec, František Martan, Zdeněk Rozenský. Praha : Státní nakladatelství technické literatury, 1985

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 576

A	B	C	D	E	FX
17,53	14,58	11,63	20,31	26,91	9,03

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., Mgr. Adam Jakubička, Mgr. Ivana Eliašová
Last change: 08.02.2018
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 5

Recommended semester: 2.

Educational level: I.

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

Course requirements:
 final exam
 Scale of assessment (preliminary/final): 55/45

Learning outcomes:
Students will be able to use the methods of integral calculus of single-variable functions and the theory of infinite series to solve both practical and theoretical problems of appropriate difficulty.

Class syllabus:
Antiderivative, basic methods of evaluation of primitives, integration of rational functions, trigonometric substitutions. Riemann integral of one variable, fundamental theorems of integral calculus. Infinite series, convergence tests. Absolutely and conditionally convergent series and their rearrangements. Power and Taylor series, interval of convergence.

Recommended literature:
Matematická analýza II / Tibor Neubrunn, Jozef Vencko. Bratislava : Univerzita Komenského, 1992
Cvičenia z matematickej analýzy II / Zbyněk Kubáček, Ján Valášek. Bratislava : Univerzita Komenského, 2010
Matematická analýza 1 / Jiří Brabec, František Martan, Zdeněk Rozenský. Praha : Státní nakladatelství technické literatury, 1985

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 489

A	B	C	D	E	FX
17,18	12,07	12,88	23,11	33,74	1,02

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., Mgr. Adam Jakubička

Last change: 08.02.2018
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-615/10	**Course title:** Mathematical Propedeutics (1)

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

Number of credits: 2

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
 homework
 Approximate grading scale: A#92%, B 84%, C 76%, D 68%, E 60%
 Scale of assessment (preliminary/final): 100/0

Learning outcomes:
 better grasp of high-school mathematics, understanding of proof methods and common practices used in mathematics, improved problem-solving skills in various mathematical domains, higher-level overview of mathematics

Class syllabus:
 revision of high-school mathematics, explanation of proof methods; discussions and problem-solving in the areas of discrete mathematics, combinatorics, graph theory, algebra, calculus depending on specific demands of the students

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 245

A	B	C	D	E	FX
62,86	6,94	7,76	5,71	5,31	11,43

Lecturers: doc. RNDr. Ján Mazák, PhD.

Last change: 07.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-616/14	**Course title:** Mathematical Propedeutics (2)

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

Number of credits: 2

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements: homeworks Approximate grading scale: A#92%, B 84%, C 76%, D 68%, E 60% Scale of assessment (preliminary/final): 100/0

Learning outcomes: understanding of proof methods and common practices used in mathematics, improved problem-solving skills in various mathematical domains

Class syllabus: additional explanations, discussions and problem-solving in the areas of discrete mathematics, combinatorics, graph theory, algebra, calculus

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution Total number of evaluated students: 104

A	B	C	D	E	FX
55,77	6,73	1,92	13,46	8,65	13,46

Lecturers: doc. RNDr. Ján Mazák, PhD.

Last change: 07.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAMŠ/1-BIN-210/15	**Course title:** Mathematics for Biologists

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

Number of credits: 5

Recommended semester: 4.

Educational level: I.

Prerequisites:

Antirequisites: PriF-FMFI.KAMŠ/N-bBXX-082/15

Course requirements:
 Continuous assessment: short quizzes, homework sets
 Examination: written
 Grade scale: A 90%, B 75%, C 60%, D 55%, E 40%
 Scale of assessment (preliminary/final): 50/50

Learning outcomes:
 Acquisition of basic knowledge about the possibilities and methods of using mathematics in biology, reading and drawing graphs, use of basic statistics. Ability to analyze simple problems using dynamic systems.

Class syllabus:
 Principles of mathematical modeling in natural sciences. Data and their graphical display. Linear dependence, exponential and logarithmic functions and their practical use. Derivatives, integrals, vectors and matrices, their significance and practical use in models in cell biology, biochemistry, virology, molecular biology, genetics, ecology and other fields. Fundamentals of dynamical systems: acquaintance with concepts: system of ordinary differential equations, vector, matrix, phase portrait analysis, properties of equilibria and oscillations. Basics of probability and statistics.

Recommended literature:
 E. N. Bodine, S. Lenhart, L. J. Gross, Mathematics for Life Sciences, Princeton University Press, 2014
 K. A. Strout, Engineering Mathematics, 7th ed, Palgrave MacMillan, 2013

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution					
Total number of evaluated students: 16					
A	B	C	D	E	FX
37,5	31,25	12,5	12,5	6,25	0,0

Lecturers: doc. Mgr. Richard Kollár, PhD.

Last change: 13.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAI+KI/1-BIN-301/15	**Course title:** Methods in Bioinformatics

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

Number of credits: 6

Recommended semester: 5.

Educational level: I., II.

Prerequisites:

Course requirements:
 Homework assignments (30%), group project (10%), weekly quizzes (10%), written exam (50%).
 Grades: A 90%, B 80%, C 70%, D 60%, E 50%. More information on the course website.
 Scale of assessment (preliminary/final): 50/50

Learning outcomes:
 Students will be familiar with basic problems and methods in bioinformatics; they will be able to choose an appropriate method for a given biological problem and to interpret its results.

Class syllabus:
 Basic concepts from molecular biology, algorithms and machine learning. Sequencing and assembling genomes. Gene finding. Sequence alignment. Evolutionary models and phylogenetic trees. Comparative and population genomics. RNA structure. Motif finding and gene expression analysis. Protein structure and function. Selected current topics.
 Students of computer science programs will focus on computer science methods and mathematical modeling of the covered problems.

Recommended literature:
 Biological sequence analysis : Probabilistic models of proteins and nucleic acids / Richard Durbin ... [et al.]. Cambridge : Cambridge University Press, 1998
 Understanding bioinformatics / Marketa Zvelebil, Jeremy O. Baum. New York : Garland Science, 2008

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 149

A	B	C	D	E	FX
32,89	18,79	20,13	14,77	5,37	8,05

Lecturers: doc. Mgr. Bronislava Brejová, PhD., doc. Mgr. Tomáš Vinař, PhD., Mgr. Askar Gafurov, PhD.
Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI-PriF.KBCh/1-BIN-314/15	**Course title:** Methods in Molecular and Cell Biology

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

Number of credits: 5

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI-PriF.KBCh/1-BIN-303/15 - Essential Cell Biology

Antirequisites: PriF.KBCh/N-bCBI-018/15

Course requirements: There will be regular written tests during the semester. Credits will not be awarded to a student who obtains less than 50% of the overall evaluation of the written tests. The course will be completed in the form of an oral exam. The evaluation will be given as follows: A - excellent results, B - above-average work, C - normal reliable work, D - acceptable results, E - results meeting the minimum criteria, Fx - insufficient results. Scale of assessment (preliminary/final): 0/100

Learning outcomes: After completing the course, students will have an overview of key methods and experimental approaches used in molecular and cell biology.

Class syllabus: Syllabus/Indicative Content: Principles of preparation of recombinant DNA molecules. Construction of gene libraries (genomic and cDNA). Properties and types of vectors. Recombinant selection and analysis. Enzymes in recombinant DNA techniques. Nucleic acid hybridization and preparation of molecular probes. Labeling of DNA and RNA molecules, radioactive and non-radioactive techniques. Southern and Northern blotting, in situ hybridization, subtractive hybridization, PNA and antisense probes. DNA microchip technology. Polymerase chain reaction (PCR). Principle and variations of the technique: asymmetric PCR, inverse PCR, reverse transcriptase PCR, quantitative PCR. Isothermal amplification of nucleic acids. Nucleic acid sequencing. First, second and third generation sequencing technologies. In vitro and in vivo mutagenesis. Methods of site-directed mutagenesis and its practical use. Gene disruptions and gene replacements.

Molecular evolution in vitro. Preparation of aptamers and nucleic acids with catalytic activity in vitro. SELEX.

Principles of heterologous gene expression. Expression systems. Host strains. DNA transfer techniques into cells. Preparation of recombinant proteins.

Methods for isolation and investigation of proteins (electrophoretic methods, native and denaturing electrophoresis, isoelectric focusing, chromatographic methods, Western blotting, immunological methods).

Methods of protein interaction analysis (DNA-protein, RNA-protein, protein-protein: DNase I footprinting, gel retardation, NC filter binding assay, one-, two- and three-hybrid system, reverse two-hybrid system, chemical crosslinking).

Microscopic methods (light, fluorescence and electron microscopy, use of green fluorescent protein).

Recommended literature:

Watson et al. (2007) Recombinant DNA: Genes and Genomes – A short course. 3rd edition. CSHL Press.

Alberts et al. (2014) Molecular Biology of the Cell, Garland Science.

Lodish et al. (2016) Molecular Cell Biology. 8th Edition, W. H. Freeman and Company.

Languages necessary to complete the course:

Slovak, English

Notes:

Past grade distribution

Total number of evaluated students: 4

A	B	C	D	E	FX
50,0	25,0	25,0	0,0	0,0	0,0

Lecturers: doc. Mgr. Peter Polčic, PhD., Ing. Martina Neboháčová, PhD., prof. RNDr. Jozef Nosek, DrSc., Mgr. Lucia Mentelová, PhD., Mgr. Katarína Procházková, PhD.

Last change: 11.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KI/1-INF-171/15	**Course title:** Operating Systems

Educational activities:
 Type of activities: lecture / practicals
 Number of hours:
  per week: 3 / 1 **per level/semester:** 39 / 13
 Form of the course: on-site learning

Number of credits: 6

Recommended semester: 4.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KI/1-INF-171/10

Course requirements:
 Work during semester: homeworks
 Final exam: both written and oral
 Approximate grading scale: A 94%, B 85%, C 75%, D 66%, E 60%
 Scale of assessment (preliminary/final): 30/70

Learning outcomes:
 The student will gain a knowledge necessary to understand structure of the operating system, services it provides and classic algorithms used by the operating system for the management of various types of resources.

Class syllabus:
 Concept and structure of the OS: abstraction of resources, system calls, the kernel, drivers. Processes and interprocess communication: hierarchy of processes, threads, creation, preemption, context switch, the state and life cycle of a process, virtual memory map. Process synchronisation: race conditions, critical section, mutual exclusion and its correct solution, typical problems in process synchronisation, synchronisation mechanisms (semaphores, locks), busy waiting. Deadlock: necessary conditions of deadlock, methods for solving deadlock problems. Management of processes and processors: scheduler types and functions. Memory management: its functions, approaches to managing memory, virtual memory, page fault and the handler, page replacement algorithms, LRU, demand paging, working set model, implementation details and problems. File system: its functions, VFS layer (Virtual file system), file types, hierarchy of directories, management of free disk space, management of allocated space, shared files. I/O device management: I/O device types, allocating I/O,management of disk requests.

Recommended literature:
 Tanenbaum, A. S., Woodhull, A. S.: Operating Systems: Design And Implementation (The MINIX book), Third Edition, Pearson, 2009, ISBN-13: 978-0-13-505376-8
 Tanenbaum, A. S., Bos, H.: Modern Operating Systems, Fourth Edition, Pearson, 2015, ISBN-13: 978-013-359162-0

Languages necessary to complete the course:
slovak, english

Notes:

Past grade distribution
Total number of evaluated students: 333

A	B	C	D	E	FX
20,72	15,92	25,53	12,91	13,51	11,41

Lecturers: Ing. Dušan Bernát, PhD., RNDr. Richard Ostertág, PhD., doc. RNDr. Ján Mazák, PhD.

Last change: 07.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI-PriF.KOrCh/1-BIN-102/15	**Course title:** Organic Chemistry

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

Number of credits: 5

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements: tests, laboratory exercises, essay, oral exam   Scale of assessment (preliminary/final): 95/5

Learning outcomes: Students will acquire basic theoretical knowledge about the variability of structures and reactions of carbon compounds. They will understand molecular interactions, acid-base properties, isomerism, electron effects. The course also covers functional groups, nomenclature, transformation, mechanism of selected reactions. fundamentals of chemistry of biomacromolecules, especially proteins and nucleic acids. They are familiar with current trends in organic chemistry. Laboratory exercises provide experience in basic methods of purification and separation of organic compounds - crystallisation, distillation, extraction, chromatography. Students can handle simple synthetic procedures and evidence of characteristic groups of organic compounds as well as isolation of organic compounds from natural materials.

Class syllabus:

Recommended literature: J. McMurry, Organic Chemistry, Cengage Learning, 2009.   J. Clayden, N. Greeves, S. Warren, Organic Chemistry, Oxford University Press, 2012   P. Záhradník, M. Kollárová, Prehľad chémie 2 (Organická chémia a biochémia), SPN Bratislava 1997   Selected websites and databases of organic compounds and reactions

Languages necessary to complete the course: Slovak, English

Notes:

Past grade distribution					
Total number of evaluated students: 26					
A	B	C	D	E	FX
15,38	19,23	7,69	15,38	11,54	30,77

Lecturers: doc. RNDr. Andrej Boháč, CSc., RNDr. Viera Poláčková, PhD.

Last change: 09.02.2018

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KJFB/2-FBF-107/15	**Course title:** Organic Chemistry and Biochemistry

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

Number of credits: 6

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

Recommended prerequisites:
Chemical bond and its effect on the structure of organic molecules. Physical and chemical properties, reactivity of organic molecules. Structure and interactions of biomolecules. Amino acids, peptides and protein-structure, functions, interactions. Enzymes, catalysis. Nucleotides and nucleic acids. Lipids, biological membranes, membrane dynamics. Metabolism of biomolecules, principles.
The exercises are based on the use of computer chemistry in solving problems related to the structure, properties, reactivity of organic molecules that are presented in lectures.

Course requirements:
Interim evaluation: test
Test: test
Indicative rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 30test/70expensive knowledge

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 52

A	B	C	D	E	FX
67,31	9,62	1,92	9,62	5,77	5,77

Lecturers: prof. RNDr. Ján Urban, DrSc., doc. RNDr. Iveta Waczulíková, PhD.

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI+KAI/1-BIN-105/15	**Course title:** Perspectives of the Current Bioinformatics

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

Number of credits: 2

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:
To complete the course, students have to actively participate in all field trips and submit an essay from one field trip. The grade is given based on the essay. Grades A 90%, B 80%, C 70%, D 60%, E 50%.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will be familiar with the areas of biomedical research in which bioinformatics plays a key role, particularly in the context of the research groups in Slovakia

Class syllabus:
Presentations of research groups of Comenius University, Slovak Academy of Sciences and other institutions with emphasis on the role of bioinformatics in research, typically in the form of a field trip to a particular research facility.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 42

A	B	C	D	E	FX
83,33	0,0	0,0	0,0	2,38	14,29

Lecturers: doc. Mgr. Bronislava Brejová, PhD., doc. Mgr. Tomáš Vinař, PhD.

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KTV/1-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:** 26
 Form of the course: on-site learning

Number of credits: 0

Recommended semester: 1.

Educational level: I.

Prerequisites:

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

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

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

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 5698

A	B	C	D	E	FX
95,35	1,7	0,12	0,0	0,07	2,76

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

Last change: 16.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KTV/1-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:** 26
  Form of the course: on-site learning

Number of credits: 0

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
Practising offensive and defensive combinations and game at modified rules in collective games such as basketball, volleyball, soccer, floorball. Command of elements of higher difficulty in terms of the level of the activity abilities (crawl stroke, breast stroke, butterfly stroke, trampoline jump, aerobic compositions with steps, fitball, elastic gums, paddling on the running water.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 4814

A	B	C	D	E	FX
96,72	1,62	0,1	0,06	0,04	1,45

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

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KTV/1-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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I.

Prerequisites:

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

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 2799

A	B	C	D	E	FX
98,54	0,5	0,11	0,04	0,0	0,82

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

Last change: 16.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KTV/1-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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I.

Prerequisites:

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

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 2518

A	B	C	D	E	FX
98,53	0,16	0,08	0,04	0,0	1,19

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

Last change: 15.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

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

Number of credits: 2

Recommended semester: 5.

Educational level: I.

Prerequisites:

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

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 1864

A	B	C	D	E	FX
98,98	0,38	0,11	0,0	0,0	0,54

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

Last change: 15.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KTV/1-MXX-320/00	**Course title:** Physical Education and Sport (6)

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

Number of credits: 2

Recommended semester: 6.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

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

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1630

A	B	C	D	E	FX
98,71	0,37	0,12	0,0	0,0	0,8

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

Last change: 02.06.2015

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KI/1-INF-270/15	**Course title:** Practicum in Databases

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

Number of credits: 2

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements:
 homework
 Approximate grading scale: A#92%, B 84%, C 76%, D 68%, E 60%

Learning outcomes:
 Practical experience with Datalog and SQL queries in relational databases; overview of related technologies; introduction to database design, optimization and administration.

Class syllabus:
 Writing and debugging database queries. Design of a relational database: tables, constraints, foreign keys, indexes. Importing, exporting and updating data via command-line tools and from programs in common languages. Basic optimisation. Access rights.

Recommended literature:

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 155

A	B	C	D	E	FX
52,26	11,61	6,45	13,55	2,58	13,55

Lecturers: doc. RNDr. Ján Mazák, PhD., RNDr. Michal Rjaško, PhD.

Last change: 07.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KI/1-INF-516/15	**Course title:** Principles of Software Design

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

Number of credits: 6
Recommended semester: 3.
Educational level: I.
Prerequisites:
Antirequisites: FMFI.KI/1-INF-516/10
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:
Past grade distribution Total number of evaluated students: 262

A	B	C	D	E	FX
42,37	19,47	14,89	10,31	8,4	4,58

Lecturers: doc. RNDr. Robert Lukoťka, PhD.
Last change: 08.11.2021
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAMŠ/2-INF-175/18	**Course title:** Probability and Statistics

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

Number of credits: 5

Recommended semester: 5.

Educational level: I., II.

Prerequisites:

Antirequisites: FMFI.KAMŠ/2-INF-175/15

Course requirements:
written tests, final exam
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
Students will be familiar with mathematical foundations of probability and statistics. They will be able to solve common types of problems involving probability and conduct simple statistical analyses.

Class syllabus:
Definition of probabilistic model and basic properties of probabality, conditional probability, Bayes theorems, random variables, random vectors and their characteristics, limit theorems, introduction to Markov chain theory, probabilistic theory of information, regression model with normally distributed errors, introduction to theory of parameter estimation and statistical hypothesis testing

Recommended literature:
Pravdepodobnosť a matematická štatistika : Štatistické analýzy / František Lamoš, Rastislav Potocký. Bratislava : Univerzita Komenského, 1998
Zbierka úloh zo základov teórie pravdepodobnosti / Radoslav Harman, Erika Hönschová, Ján Somorčík. Bratislava : PACI, 2009
Electronic course notes published on the course web site

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 170

A	B	C	D	E	FX
32,94	9,41	16,47	16,47	16,47	8,24

Lecturers: doc. Mgr. Radoslav Harman, PhD., doc. Mgr. Lenka Filová, PhD.
Last change: 13.05.2018
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-127/15	**Course title:** Programming (1) in C/C++

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

Number of credits: 8

Recommended semester: 1.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KI/1-INF-127/11

Course requirements:
During semester: tasks from practicals (25%), homeworks (15%), test (30%).
Final practical exam (30%). Grades: A 90%, B 80%, C 70%, D 60%, E 50%. More information on the course website.
Scale of assessment (preliminary/final): 70/30

Learning outcomes:
Students will be able to write short programs in C/C++ language, debug them and understand existing code. They will be familiar with basic control and data structure constructs of the language, as well as simple dynamic data types and algorithms operating on them.

Class syllabus:
Basic control and data structure constructs of the language (loops, conditionals, variables and their types, functions and their parameters, arrays, pointers, strings, files). Basic algorithms and data structures (sorting, linked lists, hash tables, trees, arithmetic expressions, stack and queue, recursion, filling connected areas).

Recommended literature:
Algorithms in C : Parts 1-4 : Fundamentals, data structures, sorting, searching / Robert Sedgewick. Boston : Addison-Wesley, 1998
Programming in C / Stephen G. Kochan. Indianapolis : SAMS Publishing, 2005
Algoritmy v jazyku C a C++ : Praktický průvodce / Jiří Prokop. Praha : Grada, 2009
Custom electronic materials published at the course website http://compbio.fmph.uniba.sk/vyuka/prog/

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution					
Total number of evaluated students: 470					
A	B	C	D	E	FX
33,4	16,38	12,13	14,68	8,72	14,68

Lecturers: doc. Mgr. Bronislava Brejová, PhD., Ing. Dušan Bernát, PhD., Mgr. Adrián Goga

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-166/11	**Course title:** Programming (2) in Java

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

Number of credits: 6

Recommended semester: 2.

Educational level: I.

Prerequisites: FMFI.KI/1-INF-127/15 - Programming (1) in C/C++

Antirequisites: FMFI.KAI/1-AIN-170/00

Course requirements:
 Assignments: practical tests (40% of overall evaluation), homework (30% of overall evaluation).
 Exam: written, practical, and oral part (30% of overall evaluation).
 Grading scale: A 95%, B 90%, C 80%, D 70%, E 60%
 Scale of assessment (preliminary/final): 70/30

Learning outcomes:
 Students will master the basics of object-oriented programming in Java, as well as the creation of simple graphical user interfaces. They will get acquainted with selected basic graph algorithms and manage their implementation in Java.

Class syllabus:
 A.) OBJECT-ORIENTED PROGRAMMING IN JAVA
 Basics of the Java language for C/C++ programmers. Object-oriented programming basics, inheritance, polymorphism. Exceptions. Generic programming, Java Collections, iterator, comparator. Local and anonymous classes, lambda expressions.
 B.) GRAPH ALGORITHMS
 Representation of directed and undirected graphs in computer memory, depth-first and breadth-first search, topological sorting of directed acyclic graphs, backtracking approach to solving graph problems (e.g., the maximum clique problem).
 C.) CREATION OF APPLICATIONS WITH GRAPHICAL USER INTERFACE
 Creation of simple graphical user interfaces using a suitable library (e.g., JavaFX), event-driven programming.

Recommended literature:
 Electronic materials and links at the course website.
 Algorithms in Java, 3rd ed., Part 5: Graph algorithms / Robert Sedgewick. Boston : Addison-Wesley, 2003
 Thinking in Java, 4th ed. / Bruce Eckel. Upper Saddle River : Prentice-Hall, 2006 Java SE 8 for the Really Impatient / Cay S. Horstmann. Upper Saddle River : Addison-Wesley, 2014

Grafy a jejich aplikace / Jiří Demel. Prague : Academia, 2002

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 571

A	B	C	D	E	FX
48,86	9,81	10,86	11,38	10,33	8,76

Lecturers: RNDr. Peter Kostolányi, PhD., Mgr. Lukáš Kiss

Last change: 15.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-225/15	**Course title:** Programming (3)

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

Number of credits: 6

Recommended semester: 3.

Educational level: I.

Prerequisites: FMFI.KI/1-INF-127/15 - Programming (1) in C/C++ and FMFI.KI/1-INF-166/11 - Programming (2) in Java

Antirequisites: FMFI.KI/1-INF-225/00

Course requirements:
 midsemester test, homeworks, final practical exam
 Assessment (approx.): A 94%, B 88%, C 75%, D 69%, E 63%
 More detailed information is available on the website.
 Scale of assessment (preliminary/final): 50/50

Learning outcomes:
 Students will be able to use advanced constructs of Java programming language, design appropriate implementation of common situations in class and interface design, improve existing objectoriented code.

Class syllabus:
 Advanced constructs of Java programming language (generics and bounded quantification, inner classes, lambda expressions,garbage collection, threads and their life cycle, thread synchronisation). Design patterns (Singleton, Composite, Strategy, Decorator, Iterator, Visitor, ...);

Recommended literature:
 Erich Gamma ... [et al.]. Design Patterns: Elements of Reusable Object-Oriented Software. Addison-Wesley, 1994, ISBN-13: 978-0201633610.
 Eric Freeman, Elisabeth Robson. Head First Design Patterns: Building Extensible and Maintainable Object-Oriented Software. O'Reilly Media, 2020, ISBN-13: 978-1492078005.

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution					
Total number of evaluated students: 459					
A	B	C	D	E	FX
35,73	13,94	20,48	13,07	13,94	2,83

Lecturers: RNDr. Richard Ostertág, PhD., RNDr. Šimon Sádovský, PhD., Mgr. Askar Gafurov, PhD.

Last change: 28.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KTV/1-UXX-340/00	**Course title:** Recreation Sports in Dialy Routine of Pupils and Students

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

Number of credits: 2

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
To optimize the daily working programme of the students, the programmes of the sport recreational activities and time-off the students. The sport and health in a value orientation of the students. Using developed elemens in an education physical activity and sport preparation.
The programmes of the sport recreational activities as a basic precondition of health strengthening, acquirement of physical capability, fitness, regaining of working energy and readiness of body to confront stress situations and dangerous factors as a basic precondition of health strengthening, acquirement of physical capability, fitness, regaining of working energy and readiness of body to confront stress situations and dangerous factors.

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 44

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

Lecturers: Mgr. Tomáš Kuchár, PhD.

Last change: 14.01.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
 Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

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

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

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

Recommended literature:
 The textbook: : Точка Ру А1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 707

A	B	C	D	E	FX
58,56	16,55	11,03	4,38	1,84	7,64

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

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

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

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

Recommended literature:
 Textbook: Точка Ру А1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 421

A	B	C	D	E	FX
65,08	15,68	8,79	3,8	0,95	5,7

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

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

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

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

Recommended literature:
Точка Ру А2 (Ольга Долматова, Екатерина Новачац) a Short Stories in Russian (Olly Richards, Alex Rowlings)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 200

A	B	C	D	E	FX
70,5	17,5	8,5	2,5	0,0	1,0

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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:** 26
  Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

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

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

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

Recommended literature:
 Точка Ру А2 (Ольга Долматова, Екатерина Новачац) a Short Stories in Russian (Olly Richards, Alex Rowlings)

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 144

A	B	C	D	E	FX
75,69	13,19	6,94	2,78	0,69	0,69

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAI/2-IKVa-192/19	**Course title:** Science, Technology and Humanity: Opportunities and Risks

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

Number of credits: 5

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

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

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

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

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

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

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 48

A	B	C	D	E	FX
56,25	18,75	6,25	6,25	6,25	6,25

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

Last change: 28.02.2020

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

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

Number of credits: 2

Recommended semester: 1.

Educational level: I., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 23

A	B	C	D	E	FX
47,83	0,0	0,0	0,0	0,0	52,17

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 2.

Educational level: I., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 22

A	B	C	D	E	FX
81,82	0,0	4,55	0,0	0,0	13,64

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 2

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 8

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

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

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

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

Number of credits: 2

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

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

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

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

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

Languages necessary to complete the course:

Notes:

Past grade distribution Total number of evaluated students: 7

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

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KDMFI/1-INF-175/00	**Course title:** Social Aspects of Informatics

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

Number of credits: 2

Recommended semester: 4.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KDMFI/1-UXX-332/10 and FMFI.KZVI/1-UXX-333/10

Course requirements:
 Three essays submittied during the semester, each for 15 points. Grades: A 41-45 points, B 36-40, C 31-35, D 26-30, E 21-25.
 Scale of assessment (preliminary/final): 100/0

Learning outcomes:
 Students will be motivated to think about the impact of information and communication technologies on our lives. Students will be familiar with historical perspective of this impact.

Class syllabus:
 New ICT are developed and improved very rapidly. They are becoming an invisible part of our everyday life. We try to look at changes introduced by ICT, what positive they are introducing and what the risks are too. We try to analyse different areas of society: education system, medical care, arts, business, finance, manufacturing, etc. Especially we deal with Slovak copyright law and computer crime.

Recommended literature:
 Abelson,Ledeen, Lewis, BlownTo Bits, Addison Wesley 2008, www.bitsbook.com
 Materials shared at the course website

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution
 Total number of evaluated students: 1809

A	B	C	D	E	FX
69,04	8,68	4,37	11,06	3,04	3,81

Lecturers: RNDr. Michal Winczer, PhD.

Last change: 21.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University 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.

Prerequisites:

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

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

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

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ does not rent ski equipment.

Past grade distribution
Total number of evaluated students: 227

A	B	C	D	E	FX
99,56	0,0	0,44	0,0	0,0	0,0

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

Last change: 16.06.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University 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: 2.

Educational level: I.

Prerequisites:

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

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

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

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ will provide sports equipment.

Past grade distribution
Total number of evaluated students: 194

A	B	C	D	E	FX
94,33	0,0	0,0	0,0	0,0	5,67

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

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 1

Recommended semester: 3.

Educational level: I.

Prerequisites:

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

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

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

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

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ does not rent ski equipment.

Past grade distribution
Total number of evaluated students: 19

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

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

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

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

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

Number of credits: 1

Recommended semester: 4.

Educational level: I.

Prerequisites:

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

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

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

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

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ will provide material equipment.

Past grade distribution
Total number of evaluated students: 18

A	B	C	D	E	FX
88,89	0,0	0,0	0,0	0,0	11,11

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

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KJP/1-MXX-133/18	**Course title:** Supplementary English Course (1)

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

Number of credits: 2

Recommended semester: 1.

Educational level: I.

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 25

A	B	C	D	E	FX
52,0	24,0	8,0	0,0	8,0	8,0

Lecturers: Mgr. Ing. Jana Kočvarová

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KJP/1-MXX-134/18	**Course title:** Supplementary English Course (2)

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

Number of credits: 2

Recommended semester: 2.

Educational level: I.

Prerequisites:

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

Learning outcomes:

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

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

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 26

A	B	C	D	E	FX
57,69	15,38	0,0	11,54	3,85	11,54

Lecturers: Mgr. Ing. Jana Kočvarová

Last change: 17.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/1-INF-526/15	**Course title:** System Programming

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

Number of credits: 6

Recommended semester: 2.

Educational level: I.

Prerequisites:

Recommended prerequisites:
 The course requires knowledge of the C programming language.

Course requirements:
 Project (during semester), written final test (at least 50% needed) and oral final exam (may be waived)
 Approximate grading scale: A 90%, B 80%, C 70%, D 60%, E 50%
 Scale of assessment (preliminary/final): 30/70

Learning outcomes:
 Students will be familiar with principles and methods of system programming and will have a practical experience with their use.

Class syllabus:
 (1) Fundamentals of system programming
 data representation, assembler, instruction types, address modes, program structure in GNU as, linking programs, calling conventions, stack manipulation, libraries, loading and executing programs
 (2) IA-32 architecture and X86-64 architecture
 basic architecture, registers, selected instructions, memory models, virtual memory
 (3).Selected system calls of UNIX systems
 Starting and temrinating processes, input/output, network communication, terminal, signals

Recommended literature:
 Custom course notes published on the course website. Publicly available web resources.

Languages necessary to complete the course:
 Slovak, English

Notes:

Past grade distribution					
Total number of evaluated students: 253					
A	B	C	D	E	FX
13,04	10,67	17,39	14,62	29,25	15,02

Lecturers: RNDr. Jaroslav Janáček, PhD., Ing. Dušan Bernát, PhD.

Last change: 22.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KI/2-INF-176/15	**Course title:** Unix for System Administrators

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

Number of credits: 6

Recommended semester: 5.

Educational level: I., II.

Prerequisites:

Course requirements:
 Practical assignments (both during the semester and on final exam)
 Approximate grading scale: A 92%, B 84%, C 76%, D 68%, E 60%
 Scale of assessment (preliminary/final): 40/60

Learning outcomes:
 After completing the course the students will know the principles of UNIX system administration and they will be able to practically carry out the basic duties of a system administrator.

Class syllabus:
 users, groups, passwords
 access permissions for files and directories, ACL
 filesystem structure
 character and block devices
 special filesystem objects (symlink, pipe)
 mounting and unmounting of filesystems to the directory hierarchy (mount, umount, /etc/fstab)
 creating filesystems
 system startup and shutdown - /etc/inittab, runlevels
 job scheduling (cron, at, batch)
 TCP/IP configuration (ifconfig, route)
 network services (/etc/services, /etc/inetd.conf, /etc/protocols, /etc/hosts, ...)
 DNS – client (/etc/resolv.conf)
 DNS – server
 NFS
 Firewall
 SystemD
 Assumptions:
 good user-level knowledge of UNIX systems, directory hierarchy navigation, creating and editing files (vi, joe), shell programming (sh/bash), commands find, grep, cat, cut, ls, awk.

Recommended literature:

Course notes provided on the course website, freely available electronic materials

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 164

A	B	C	D	E	FX
12,8	35,98	30,49	12,2	5,49	3,05

Lecturers: RNDr. Jaroslav Janáček, PhD., Ing. Dušan Bernát, PhD.

Last change: 22.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KDMFI/1-AIN-189/15	**Course title:** Web Applications (1)

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

Number of credits: 6

Recommended semester: 2.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KZVI/1-AIN-615/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 1913

A	B	C	D	E	FX
37,27	11,97	12,49	12,23	12,91	13,12

Lecturers: PaedDr. Roman Hrušecký, PhD., RNDr. Marek Nagy, PhD.

Last change: 22.09.2017

Approved by: