Course descriptions

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COURSE DESCRIPTION

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

Course ID: FMFI.KAI/1-AIN-245/17	**Course title:** 3D Technologies, Robotics and Artificial Intelligence

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

Number of credits: 3
Recommended semester: 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: 12

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

Lecturers: RNDr. Michal Malý, PhD., Mgr. Ján Žižka, PhD., Mgr. Tomáš Kovačovský
Last change: 06.10.2017
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KDMFI+KAI/1-AIN-210/15	**Course title:** Algorithms and Data 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: 3.

Educational level: I.

Prerequisites: FMFI.KAI/1-AIN-170/13 - Programming (2)

Antirequisites: FMFI.KZVI/1-AIN-210/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 1226

A	B	C	D	E	FX
19,09	9,62	13,62	13,62	24,96	19,09

Lecturers: RNDr. Andrej Blaho, PhD., PaedDr. Daniela Bezáková, PhD.

Last change: 30.11.2021

Approved by:

STATE EXAM DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAI/1-AIN-955/15	**Course title:** Applied Informatics

Number of credits: 4

Educational level: I.

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

Class syllabus:
The exam consists of material taught in compulsory subjects in the field of: discrete mathematics, mathematical analysis, algebra and logic, programming, databases, web applications, computer principles - (hardware, system programming, operating systems, computer networks) and the creation of information systems.
A more detailed and updated content of the questions will be published in advance in each academic year through the academic information system. As a rule, specific issues in state studies will integrate several areas related to the topic of a specific bachelor's thesis.

State exam syllabus:
1.
M. Základné kombinatorické konfigurácie. Binomické koeficienty. Princíp zapojenia a vypojenia.
P. Prefixové stromy. Kompresia textov a Huffmanovo kódovanie. Porovnanie implementácií v rôznych jazykoch.
A. Správa pamäti: jednoduchá správa pamäti, virtuálna pamäť, stránkovanie, segmentovanie. Algoritmy výmeny stránok.
2.
M. Typy dôkazov. Priamy a nepriamy dôkaz. Dôkaz sporom. (Ilustrovat na zakladnej teorii cisel. Delitelnost, prvociselnost, atd.) Matematická indukcia.
P. Rozdeľuj a panuj triediace algoritmy. Využitie rekurzie, možné problémy s rekurziou v rôznych jazykoch. Vlastnosti algoritmu merge-sort zdola nahor.
A. Bezpečnosť sietí – bezpečnostné problémy a mechanizmy na rôznych vrstvách – VLAN.
3.
M. Diskrétna pravdepodobnosť. Experiment a náhodný jav. Bernoulliho schéma. Podmienená pravdepodobnosť. Bayesova veta.
P. Efektívne realizácie dátových štruktúr Set a Multiset. Porovnanie implementácií v rôznych jazykoch.
A. Navrhovanie databáz: relačný model dát, entitno relačný model dát, kardinalita vzťahov, roly entít, n-árne vzťahy, transformovanie entitno relačneho modelu na relačný, reprezentovanie podmnožín, kontextualizácia dát, reifikovanie, meta modelovanie, typy a ich explicitné uchovávanie.
4.
M. Relácie na množine. Relácia ekvivalencie a rozklady množín. Čiastočne usporiadané množiny.
P. Ošetrovanie chýb, assert, výnimky, testy, rozdiely v rôznych jazykoch.

A. Modelovanie a návrh: entitno-relačný diagram, diagram dátových tokov, UML diagramy: use-case, stavový, activity, sekvenčný, komponentný, triedny, deployment. Študent vie nakresliť príklad každého diagramu a vysvetliť ho.

5.

M. Injektívne, surjektívne a bijektívne zobrazenia. Spočítateľné a nespočítateľné množiny. Cantorova diagonalizačná metóda.

P. Efektívne reprezentácie dátovej štruktúry graf. Využitie problému Union-find pri hľadaní kostry grafu.

A. Sieťová architektúra, vrstvové modely, služby – vrstva, rozhranie, protokol, fyzický a logický tok údajov. Kľúčové problémy pri návrhu sietí.

6.

M. Limita a spojitosť funkcii jednej reálnej premennej.

P. Efektívne realizácie dátovej štruktúry asociatívneho poľa. Riešenie kolízií. Implementácie asociatívneho poľa v rôznych jazykoch.

A. Správa zariadení a správa súborov: radič, spôsoby prenosu údajov medzi radičom a pamäťou. software správy zariadení. Pojem súbor a adresár, druhy súborov, spôsoby kódovania znakov v textových súboroch.

7.

M. Derivácia funkcii jednej reálnej premennej a jej využitie pri vyšetrovaní priebehu funkcii.

P. Efektívna realizácia operácií prioritného frontu PriorityQueue. Porovnanie implementácií v rôznych jazykoch.

A. Operačný systém pri pohľade zvonku (služby, ich význam z pohľadu vyšších vrstiev vrstvového modelu počítača) a zvnútra (správa procesov, správa pamäti, správa zariadení a správa súborov). Hlavné úlohy jednotlivých správ.

8.

M. Primitívna funkcia a metódy jej výpočtu.

P. Algoritmy prechádzania stromových dátových štruktúr. Možnosti realizácie pomocou lazy algoritmov v rôznych jazykoch.

A. Organizácia počítačových systémov - vrstvový model počítača, súvislosti medzi vrstvami. Procesor (mikroprocesor, ALU, realizácia inštrukcií), vnútorná a vonkajšia pamäť, prídavné zariadenia, zbernica z hľadiska hardvéru aj softvéru.

9.

M. Logika prvého rádu: Syntax (symboly, termy, formuly) a sémantika (štruktúra, hodnota termu, splnenie formuly a teórie). Vyplývanie, nezávislosť, nesplniteľnosť a ich vzťah.

P. Stromové dátové štruktúry. Rozdiely v implementácii pomocou dynamických dátových štruktúr v rôznych jazykoch.

A. Počítačové systémy: Základné logické funkcie a ich realizácia. Boolovské funkcie. Niektoré kombinačné obvody (sčítačka, multiplexor a demultiplexor).

10.

M. Deterministický konečný automat (definícia, konfigurácia, krok výpočtu, výpočet, jazyk, ktorý akceptuje).

P. Spôsoby prehľadávania stavového priestoru, do hĺbky a do šírky, Dijkstrov algoritmus. Porovnanie implementácií v rôznych jazykoch.

A. Klientské vs. serverové webové aplikácie, princíp fungovania, vysvetlenie sieťovej komunikácie a jej spracovania.

11:

M. Nedeterministický konečný automat (definícia, konfigurácia, krok výpočtu, výpočet, jazyk, ktorý akceptuje).

P. Asymptotická výpočtová zložitosť, notácia veľké O, amortizovaná zložitosť.

A. Synchronizácia procesov a vlákien – zdieľanie údajov, časová závislosť, vzájomné vylúčenie, kritická sekcia, deadlock, busy waiting.

12.

M. Turingov stroj, porovnanie s konečným automatom. Existuje jazyk, ktorý sa nedá rozpoznať žiadnym TS?

P. Lineárne dátové štruktúry (zoznam, front, zásobník), efektívna implementácia pomocou dynamických dátových štruktúr. Rozdiely v implementácii v rôznych jazykoch.

A. Webové aplikácie na strane servera, primárne jazyk PHP (alt. Python, Ruby,...), prepojenie PHP (alt. Python, Ruby,...) s databázou, spracovanie a ošetrenie dát od používateľa, prenos dát medzi stránkami.

13.

M. Tablový alebo rezolvenčný kalkul: Pravidlá kalkulu pre logiku prvého rádu. Vyslovte vetu o korektnosti a úplnosti, vysvetlite jej vzťah k vyplývaniu.

P. Úloha abstraktného dátového typu, rozdiely v implementácii v rôznych jazykoch.

A. Web: základná štruktúra dokumentu, metadáta, sekcie a nadpisy, zgrupovanie a elementy s text-level sémantikou, formuláre. Vlastnosti CSS, ich hodnoty, selektory, box model, statické, relatívne, absolútne a fixné polohovanie, media queries.

Languages necessary to complete the course: Slovak, English	
Last change: 29.06.2022	
Approved by:	

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAI/1-AIN-426/11	**Course title:** Applied Robotics Seminar

Educational activities: **Type of activities:** course **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: During semester: active participation at seminars and/or events Grading: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 100/0

Learning outcomes: The student will gain experiences with theoretical and practical aspects of robotic contests, he or she will learn about algorithms, programming and building robots and methods for robot performance evaluation. This knowledge will be tested on particular situations.

Class syllabus: - applications of mobile robotics - history of mobile robotics - sensors and actuators - navigation, simulation, and learning - analysis of robot behavior - building and programming a real model - robotic contests – FLL - robotic contests – rozličné kategórie RoboCup - robotic contests – Istrobot, Robot Challenge - robotic contests – RoboTour, Eurobot, Sailing Robots Championship

Recommended literature: Ulrich Nehmzow: Mobile Robotics: A Practical Introduction. Emília Kratochvílová (2010) Pedagogika voľného času, TYPI UNIVERSITAS TRNAVIENSIS. Petrovic P., Balogh R., Pekarova J. (2009) Roboticke vzdelavacie iniciativy, Informatika v skole a v praxi, Ruzomberok: Pedagogicka fakulta Katolickej univerzity, 2008. ISBN 978-80-8084-362-5. p. 239-248

Languages necessary to complete the course: Slovak or English

Notes:
This course can be taken in either of the two semesters, but counts only one time. We welcome students of all study years from the whole university.

Past grade distribution
Total number of evaluated students: 200

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

Lecturers: Mgr. Pavel Petrovič, PhD.

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.KAI/1-AIN-426/11	**Course title:** Applied Robotics Seminar

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

Number of credits: 1

Recommended semester: 3.

Educational level: I.

Prerequisites:

Course requirements:
 During semester: active participation at seminars and/or events
 Grading: A 90%, B 80%, C 70%, D 60%, E 50%
 Scale of assessment (preliminary/final): 100/0

Learning outcomes:
 The student will gain experiences with theoretical and practical aspects of robotic contests, he or she will learn about algorithms, programming and building robots and methods for robot performance evaluation. This knowledge will be tested on particular situations.

Class syllabus:
 - applications of mobile robotics
 - history of mobile robotics
 - sensors and actuators
 - navigation, simulation, and learning
 - analysis of robot behavior
 - building and programming a real model
 - robotic contests – FLL
 - robotic contests – rozličné kategórie RoboCup
 - robotic contests – Istrobot, Robot Challenge
 - robotic contests – RoboTour, Eurobot, Sailing Robots Championship

Recommended literature:
 Ulrich Nehmzow: Mobile Robotics: A Practical Introduction.
 Emília Kratochvílová (2010) Pedagogika voľného času, TYPI UNIVERSITAS TRNAVIENSIS.
 Petrovic P., Balogh R., Pekarova J. (2009) Roboticke vzdelavacie iniciativy, Informatika
 v skole a v praxi, Ruzomberok: Pedagogicka fakulta Katolickej univerzity, 2008. ISBN
 978-80-8084-362-5. p. 239-248

Languages necessary to complete the course:
 Slovak or English

Notes: This course can be taken in either of the two semesters, but counts only one time. We welcome students of all study years from the whole university.					
Past grade distribution Total number of evaluated students: 200					
A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0
Lecturers: Mgr. Pavel Petrovič, PhD.					
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.KAI/1-AIN-920/00	**Course title:** BSc Seminar

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

Number of credits: 1

Recommended semester: 6.

Educational level: I.

Prerequisites:

Course requirements:
 During semester: priebežné referáty
 Final grade depends on presentation of the final thesis results
 Evaluation scale: A 90%, B 80%, C 70%, D 60%, E 50%
 Scale of assessment (preliminary/final): 100/0

Learning outcomes:
 Students will get acquainted with research work and with writing scientific publications. They will discuss about project approach to problem solving, and they will be introduced to the basics of acquiring and presenting research results.

Class syllabus:
 - student in cooperation with the advisor of bachelor thesis and with the teacher of the seminar formulates goals and stages of his or her work,
 - principles of research and scientific work, evaluation and presentation,
 - principles of producing scientific publications,
 - regular presentation of interim results of the bachelor thesis in a seminar study group

Recommended literature:
 depending on the topic of the bachelor thesis, and recommendation of the thesis advisor
 information sources on the Internet

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 899

A	B	C	D	E	FX
68,52	13,35	7,9	2,22	2,56	5,45

Lecturers: Mgr. Pavel Petrovič, PhD., RNDr. Andrej Blaho, PhD., RNDr. Zuzana Černeková, PhD.

Last change: 24.10.2016
Approved by:

STATE EXAM DESCRIPTION

Academic year: 2021/2022	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAI/1-AIN-991/15	**Course title:** BSc Thesis Defense
Number of credits: 8	
Educational level: I.	
State exam syllabus:	
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-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.KAI/1-INF-810/15	**Course title:** Competitive Programming (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:

Antirequisites: FMFI.KI+KZVI/1-INF-810/00

Course requirements:

Learning outcomes:
Improvement of skills necessary for fast, correct and efficient implementation of programming tasks. Preparation for programming competitions.

Class syllabus:
Implementation of solutions of given algorithmic tasks in modern programming languages. Emphasis is placed on fast and correct implementation of efficient algorithms and on time-efficient debugging of programs. One of the goals of these exercises is to prepare for programming competitions such as the ACM ICPC.

Recommended literature:
Introduction to algorithms / Thomas H. Cormen ... [et al.]. Cambridge, Mass. : MIT Press, 2001
The algorithm design manual / Steven S Skiena. London : Springer, 2010

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 359

A	B	C	D	E	FX
47,08	11,14	9,19	10,03	21,45	1,11

Lecturers: Mgr. Vladimír Boža, 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+KAI/1-INF-815/15	**Course title:** Competitive Programming (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:

Antirequisites: FMFI.KI+KZVI/1-INF-815/00

Course requirements:

Learning outcomes:
Improvement of skills necessary for fast, correct and efficient implementation of programming tasks. Preparation for programming competitions.

Class syllabus:
Implementation of solutions of given algorithmic tasks in modern programming languages. Emphasis is placed on fast and correct implementation of efficient algorithms and on time-efficient debugging of programs. One of the goals of these exercises is to prepare for programming competitions such as the ACM ICPC.

Recommended literature:
Introduction to algorithms / Thomas H. Cormen ... [et al.]. Cambridge, Mass. : MIT Press, 2001
The algorithm design manual / Steven S Skiena. London : Springer, 2010

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 316

A	B	C	D	E	FX
46,52	9,81	9,18	7,59	24,37	2,53

Lecturers: Mgr. Vladimír Boža, 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-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: 2.

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.KI/2-INF-183/15	**Course title:** Computer Networks (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: 5.

Educational level: I., II.

Prerequisites:

Recommended prerequisites:
 1-INF-283

Course requirements:
 practical assignments during semester, written final 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 principles and practical application of advanced technologies in computer networks and data communication.

Class syllabus:
 802.1q, STP, DOCSIS , IP routing protocols (BGP, OSPF), advanced topics in TCP (syn-cookies, ECN, ...).
 Theoretical principles of data transmission, maximal bandwidth, CRC, modulation techniques, multiplexing, FDMA, TDMA, CDMA, synchronous and asynchronous links, PPP.

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: 92					
A	B	C	D	E	FX
25,0	40,22	22,83	7,61	3,26	1,09

Lecturers: RNDr. Jaroslav Janáček, 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.KEF/1-AIN-140/16	**Course title:** Computer Principles - Hardware

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: 1.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KEF/1-AIN-140/15

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

Learning outcomes:

Class syllabus:
Principles of DDL, DTL a TTL circuits. Combinational and sequential schemes, their optimalization and practical applications (RS- and D- type flip-flops, counter and shift register). Multiplexer and demultiplexer, paralel-serial code converter, RS232 interface, statical RAM memory, delta modulation and simple digital sound recording.

Recommended literature:
 faculty guidance documents

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 571

A	B	C	D	E	FX
21,54	30,3	19,09	9,11	9,46	10,51

Lecturers: RNDr. Ján Greguš, PhD., doc. RNDr. František Kundracik, CSc.

Last change: 21.09.2018

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-180/20	**Course title:** Computer Principles - Operating Systems

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

Number of credits: 5

Recommended semester: 3.

Educational level: I.

Prerequisites: (FMFI.KAI/1-AIN-170/13 - Programming (2) or FMFI.KI/1-INF-127/15 - Programming (1) in C/C++) and (FMFI.KEF/1-AIN-140/16 - Computer Principles - Hardware or FMFI.KI/1-INF-130/00 - Computer Architecture) and (FMFI.KDMFI/1-AIN-186/16 - Computer Principles - System Programming or FMFI.KAI/1-AIN-186/20 - Computer Principles - System Programming or FMFI.KI/1-INF-526/15 - System Programming)

Antirequisites: FMFI.KDMFI/1-AIN-180/15

Course requirements:
 at least 70% of theoretical tests and at least 70% of practical tasks
 Scale of assessment (preliminary/final): 100% during semester, with the possiblity of exam in case of lack of points

Learning outcomes:
 Students will be able to use typical services of operating systems in their C programs. They will understand concepts from the theory and praxis of operating systems: memory management, process and thread synchronization, input/output devices and file systems, user maintenance, and internal principles of modern operating systems. They will be able to apply the knowledge in operating systems administration and application development.

Class syllabus:
 Address spaces, segmentation and paging, swapping, multithreaded and parallel programs, synchronization mechanisms: mutexes, semaphores, condition variables, input/output devices, organization of hard drives and ssd, file systems, journaling, data integrity and security, user maintenance.

Recommended literature:
 Remzi H. Arpaci-Dusseau, Andrea C. Arpaci-Dusseau and Peter Reiher: Operating Systems: Three Easy Pieces, Arpaci-Dusseau Books, August, 2018.
 Andrew S. Tanenbaum and Herbert Bos: Modern Operating Systems, Fourth Edition, Pearson, 2014.

Languages necessary to complete the course:

Notes:

Past grade distribution					
Total number of evaluated students: 294					
A	B	C	D	E	FX
8,84	9,52	23,13	28,23	25,51	4,76

Lecturers: Mgr. Pavel Petrovič, PhD.

Last change: 21.02.2022

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-186/20	**Course title:** Computer Principles - System Programming

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

Number of credits: 6

Recommended semester: 2.

Educational level: I.

Prerequisites: (FMFI.KEF/1-AIN-140/16 - Computer Principles - Hardware or FMFI.KI/1-INF-130/00 - Computer Architecture) and (FMFI.KAI/1-AIN-130/16 - Programming (1) or FMFI.KI/1-INF-127/15 - Programming (1) in C/C++)

Antirequisites: FMFI.KDMFI/1-AIN-186/16

Course requirements:
at least 1/3 of points from exam, half the points in assembly (including written test), and at least 70% points from tasks in C language and exercises with microcontrollers
Scale of assessment (preliminary/final): 70% during semester (exercices, homework, practical exercises with microcontroller, written test) / 30% (written exam)

Learning outcomes:
Students will acquire basic skills in C programming and in programming of microcontrollers - processing signals from sensors, controlling servo motors. They will gain debugging skills. Students will understand low-level representation of numbers in computers, basic von Neumann computer architecture, the basic architecture of CPU, machine code main loop, they will be able to create simple programs in assembly language, they will understand C function call conventions.

Class syllabus:
Introduction to programming in C, processors, internal memory, external memory, input/output devices, representation of numbers in computers, non-negative integers, binary system, other number systems with base 8 and 16, bcd-code, integers, direct code, two's complement, excess N code, real numbers - fixed and floating point, numbers in python and C, machine level code for intel pentium processors, architecture of intel pentium processors, most common instructions, branching and loops, memory addressing, memory operands, direct and indirect indexed address, working with one-dimensional array, stack and function call conventions, practical programming of functions in assembly, microcontrollers and their programming.

Recommended literature:
Tanenbaum A. S.: Structured Computer Organization (5th Edition), Pearson College Div, 2005.
Michal Brandejs: Mikroprocesory Intel Pentium a spol. Masarykova
univerzita, Brno, 2010, available on-line at http://www.fi.muni.cz/usr/brandejs/
Brandejs_Mikroprocesory_Intel_Pentium_2010.pdf

Languages necessary to complete the course:					

Notes:

Past grade distribution
Total number of evaluated students: 355

A	B	C	D	E	FX
9,58	12,96	18,31	21,97	28,17	9,01

Lecturers: Mgr. Pavel Petrovič, PhD., RNDr. Andrej Blaho, PhD.

Last change: 20.02.2022

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-611/00	**Course title:** Creative Writing

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: 3

Recommended semester: 6.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
 Principles of creative writing
 Techniques of writing
 Writing Research Papers
 Journalistic genres
 Specifics of internet writing
 Art of editing
 Creativity, originality and rules

Recommended literature:
 Lester, James D., Lester, James D. Jr., Principles of Writing Research Papers, Penguin
 Academics, 2003
 Dočekalová, Markéta, Creative writing for all (in czech), Grada Publishing, 2006
 Seley, Hans, Secrets fo science (in czech), Orbis Praha, 1964
 King, Stephen, About writing, Memoirs about writing (in czech), BETA- Dobrovský, Praha, 2002
 Bradbury, Ray, ZEN and Art of Writing, Essays about creativity (in czech), PRAGMA, Praha,
 1998

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 147

A	B	C	D	E	FX
90,48	2,72	0,68	1,36	2,04	2,72

Lecturers: Ing. František Gyarfaš, CSc.

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-221/15	**Course title:** Databases (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:
 Continuous assessment: homework, paper, project
 Exam: written, oral
 Indicative rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
 Scale of assessment (preliminary/final): 50/50

Learning outcomes:
 ability to work with a database, good knowledge of SQL, use databases in medium-sized projects, basic ability to design a database schema, good ability to read schemas such as ER and UML diagrams.

Class syllabus:
 Introduction to database systems
 Database schems and their design
 ER model, relation between ER and UML
 SQL
 Procedural features (PLSGL)
 Data management in DBMS (indexes, transactions, triggers, cursors, ...
 DB API (odbc, jdbc, etc.)
 Object-relation mapping

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 501

A	B	C	D	E	FX
4,79	9,58	14,77	22,75	24,55	23,55

Lecturers: Mgr. Stanislav Krajčovič, PhD., Mgr. Matúš Tomko, PhD., Ing. Michal Barla, PhD.

Last change: 26.06.2022
Approved by:

COURSE DESCRIPTION

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

Course ID: FMFI.KAI/1-AIN-222/15	**Course title:** Databases (2)

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

Number of credits: 5

Recommended semester: 4.

Educational level: I.

Prerequisites: FMFI.KAI/1-AIN-221/15 - Databases (1)

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 389

A	B	C	D	E	FX
11,57	14,65	16,2	15,94	20,82	20,82

Lecturers: Ing. Alexander Šimko, PhD.

Last change: 06.10.2017

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-305/15	**Course title:** Deductive Databases

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.

Prerequisites: FMFI.KAI/1-AIN-412/15 - Mathematics (4) - Logic for Computer Science and FMFI.KAI/1-AIN-222/15 - Databases (2)

Course requirements:
 Continuous assessment: 2x project (50% each)
 Scale: A 92%, B 84%, C 76%, D 68%, E 60%

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 46

A	B	C	D	E	FX
56,52	26,09	13,04	2,17	0,0	2,17

Lecturers: doc. RNDr. Martin Homola, PhD., Ing. Alexander Šimko, PhD., RNDr. Jozef Šiška, PhD., Mgr. Ján Kľuka, PhD.

Last change: 30.06.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAI/1-AIN-131/10	**Course title:** Development of Information Systems

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: 5.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KI/1-INF-516/10

Course requirements:
 Evaluation during semester - tests
 Exam, Project
 Evaluation based on total points earned: A 90%, B 80%, C 70%, D 60%, E 50%
 Scale of assessment (preliminary/final): 50/50

Learning outcomes:
 Students will learn about the stages in the software design process, models of development including agile, fundamentals of clean code, read and write basic UML diagrams, use design patterns, understand and get practice in using revision control systems for source code repositories , and try a full process of software design on a realistic project from specification till deployment to use in a combined development model.

Class syllabus:
 - Stages in development of information system
 - Tranditional development models
 - Agile methods of IS development
 - Specification of requirements of IS
 - UML
 - Design of IS
 - Design patterns
 - Integration of applications
 - Source code repositories
 - Clean code
 - Soft skills

Recommended literature:
 Design patterns : Elements of reusable object-oriented software / Erich Gamma ... [et al.].
 Boston : Addison-Wesley, 1995

Architektúra softvérových systémov : Architektúra internetových systémov a architektúra orientovaná na služby / Ľubor Šešera, Peter Grec, Pavol Návrat. Bratislava : Slovenská technická univerzita, 2011

Aplikačné architektúry softvérových systémov / Ľubor Šešera. Bratislava : Slovenská technická univerzita, 2012

Čistý kód / Robert C. Martin ; překlad Jiří Berka. Brno : Computer Press, 2009

Software engineering : Modern approaches / Eric J. Braude, Michael E. Bernstein. Hoboken : Wiley, 2011

Sun Certified Enterprise Architect for Java EE study guide / Mark Cade, Humphrey Sheil. Upper Saddle River : Prentice Hall, 2010

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 783

A	B	C	D	E	FX
26,05	36,14	22,35	9,71	3,58	2,17

Lecturers: Mgr. Pavel Petrovič, PhD.

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.KAI/1-AIN-105/15	**Course title:** Efficient Algorithms and Complexity

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.

Prerequisites: FMFI.KDMFI+KAI/1-AIN-210/15 - Algorithms and Data Structures or FMFI.KI/1-INF-220/00 - Algorithms and Data Structures

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 86

A	B	C	D	E	FX
11,63	15,12	20,93	22,09	23,26	6,98

Lecturers: doc. Mgr. Tomáš Vinař, PhD., Andrej Baláž, Mgr. Vladimír Boža, 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-311/15	**Course title:** Embedded Linux

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:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 24

A	B	C	D	E	FX
50,0	45,83	4,17	0,0	0,0	0,0

Lecturers: RNDr. Jozef Šiška, 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.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 Kožehubová, 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 Koncžehubová.
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 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-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 Koženehubová.
 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 Kožehubová, 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.KAI/1-AIN-670/00	**Course title:** Expert 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: 6

Recommended semester: 6.

Educational level: I.

Prerequisites:

Recommended prerequisites:
 None.

Course requirements:
 Examination: examination is in written and oral form, two programmning tasks and one theoretical
 question
 Continuous assessment: 0
 Approximate evaluation scale: A 90%, B 80%, C 70%, D 60%, E 50%
 Scale of assessment (preliminary/final): 0/100

Learning outcomes:
 Learning outcomes: To provide students knowledge in the field of expert/knowledge
 systems and rule-based programing.

Class syllabus:
 Class syllabus:
 - The principles and architecture of expert/knowledge systems
 - Production systems
 - Handling with facts and rules
 - Inference in production systems
 - Database examples
 - A simulation of recursion
 - A simulation of backward chaining
 - Memorising
 - Sorts in production systems
 - Solving problems by constraint satisfaction
 - Examples from the field of artificial intelligence
 - Stratification
 - Controlling inference in production systems
 - Introduction to fuzzy mathematics and inference

Recommended literature:

Recommended literature:

Giarratano, Joseph C., and Gary D. Riley. Expert systems: principles and programming. Brooks/Cole Publishing Co., 2005.

Tadeusiewicz, Ryszard. "Introduction to intelligent systems." Intelligent systems. CRC Press, 2018.

Smith, Suzanne, and Abraham Kandel. Verification and validation of rule-based expert systems. CRC Press, 2018.

Krishnamoorthy, C. S., and S. Rajeev. Artificial Intelligence and Expert Systems for Artificial Intelligence Engineers. CRC press, 2018.

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

Notes:
None.

Past grade distribution
Total number of evaluated students: 286

A	B	C	D	E	FX
20,63	12,94	36,01	14,69	11,89	3,85

Lecturers: doc. RNDr. Dušan Guller, 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.KAI/2-AIN-133/15	**Course title:** Extreme Programming

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: 6.

Educational level: I., II.

Prerequisites:

Recommended prerequisites:
No

Antirequisites: FMFI.KAI/1-AIN-680/00

Course requirements:
Continuing evaluation: homework assignments (40%)
Exam: written with oral consultation (35%)
Project: (25%)
To successfully complete the course, student has to obtain at least 60% of points on the final exam
Final grade: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
After completing the course, students will be able to use the methods and techniques Agile Extreme Programming methodology. It will be the pair programming, different techniques of use and test, test driven programming, refactoring, techniques of working with legacy code. They will be able to organize work on a collective project by project management methodology in the form of extreme programming.

Class syllabus:
History of software engineering, life cycle of software systems, traditional methodologies and agile methodologies, pillars of extreme programming (XP), pairwise programming, test driven programming, typology of tests and their use, refactoring and its techniques, principles of writing clean code, working with inherited code, principles of project management in XP - planning, development, design, testing. Design and creation of your own group project.

Recommended literature:
Langr, Jeff, 2013: Modern C++ Programming with Test-Driven Development, The Pragmatic programmers, LLC
Amr Noaman, 2018: Refactoring to Clean Code. Concepts and Techniques for Taming Wild Code, The

Pragmatic Bookshelf, Dallas, http://leanpub.com/RefactoringToCleanCode
Feathers, Michael C, 2005: Working Effectively with Legacy Code, Prentice Hall
Bernstein, David Scott, 2015: Beyond Legacy Code, Nine Practices to Extend the Life (and Value) of Your
Software, The Pragmatic Bookshelf, Dallas, Texas – Raleigh, North Carolina
Whittaker, James A., 2011, Exploratory Software Testing, Addison-Wesley

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 208

A	B	C	D	E	FX
65,38	11,06	9,62	3,85	7,69	2,4

Lecturers: Ing. František Gyarfaš, CSc.

Last change: 24.06.2022

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-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 Koževhubová

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 Koẑehubová

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 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.KAI/1-AIN-301/15	**Course title:** Fundamentals of Computer Graphics and Image Processing

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.
Prerequisites:
Antirequisites: FMFI.KAI+KAGDM/1-AIN-240/00
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:

Past grade distribution
Total number of evaluated students: 1147

A	B	C	D	E	FX
23,28	26,5	22,32	12,12	8,11	7,67

Lecturers: RNDr. Martin Madaras, PhD., RNDr. Zuzana Berger Haladová, PhD., Mgr. Dana Škorvánková
Last change: 21.09.2018
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-251/11	**Course title:** Fundamentals of Enterprise and Management

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

Number of credits: 2
Recommended semester: 6.
Educational level: I.
Prerequisites: FMFI.KAI/1-AIN-131/10 - Development of Information Systems or FMFI.KI/1-INF-516/15 - Principles of Software Design
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:
Past grade distribution Total number of evaluated students: 1050

A	B	C	D	E	FX
29,05	27,62	21,14	11,24	8,29	2,67

Lecturers: Ing. Peter Filo, 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.KAI/1-AIN-303/15	**Course title:** Game Engines

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: 5.

Educational level: I.

Prerequisites:

Recommended prerequisites:
 none

Course requirements:
 Preliminary assessment: the project implementation
 The indicative evaluation scale : A 90%, B 80%, C 70%, D 60%, E 50%
 Scale of assessment (preliminary/final): The scale of assessment (preliminary/final): 100/0

Learning outcomes:
 After completing the course, students will be able to work with freely
 available game systems and will be able to create a game and other visualization applications using
 these systems. Primarily, they will be able to work with the Unity environment.

Class syllabus:
 Overview of basic game systems. Unity: description of the entire system architecture, editing
 options, creation of objects, import of models and materials, design of scripts and their connection
 with the scene, inputs, sounds, animations and physical simulations, particle systems, explosions,
 projectiles and hits, laser beams, humanoid avatars. Network games and connection to external
 programs.

Recommended literature:
 Tomáš Holan: Unity, CZ.NIC, 2021
 3D game engine design : A practical approach to Real-Time computer graphics / David H.
 Eberly. Amsterdam : Elsevier, 2007
 Real-time rendering / Tomas Akenine-Möller, Eric Haines, Naty Hoffman. Wellesley : A. K.
 Peters, 2008

Languages necessary to complete the course:
 slovak, english

Notes:

Past grade distribution					
Total number of evaluated students: 139					
A	B	C	D	E	FX
21,58	25,18	15,11	7,19	2,16	28,78

Lecturers: RNDr. Andrej Lúčny, PhD.

Last change: 18.03.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAG/1-AIN-545/00	Course title: Geometric Objects Representation

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

Number of credits: 5

Recommended semester: 6.

Educational level: I.

Prerequisites:

Course requirements: Preliminary assessment: tests, projects Final assessment: Exam in written and oral form Final assessment examination 70% (A 90%; B 80%; C 70%; D 60%; E 50%)

Learning outcomes: The graduate gains basic knowledge of the cubic curve segments, spline curves, patches and spline surfaces. Spline curves and surfaces are studied with parametric or geometric continuities, the shape parameters are applied for modeling. The computational algorithms of the curve segments are presented.

Class syllabus: 1. Representation of cubic segments in Hermite and Bernstein basis, computational algorithms. 2. Geometric and parametric continuities for curve segments and creating: a) interpolating splines (Hermite spline, cardinal spline, Catmull-Rom spline) b) approximating splines (Bézier spline, Beta spline, B-spline). Rational curves (Bézier, NURBS) and the weights as shape parameters. 3. Representation of surfaces defined by a) geometric transformation (surfaces of revolution) b) boundary curves (ruled surfaces, Coons surfaces) c) control nets (tensor-product surfaces, Bézier, B-spline, NURBS).

Recommended literature: Geometric Modeling with Splines / R. F. Riesenfeld, E. Cohen, G. Elber: A K Peters/CRC Press; 1 ed. 2001 Fundamentals of CAGD / J. Hoschek, D. Lasser: A K Peters/CRC Press; 1 ed., 1996 Geometric Concepts for Geometric Design / W. Boehm, H. Prautzsch. Publ. by A K PETERS, 1993 Bézier and B-Spline Techniques / H. Prautzsch, W. Boehm, M. Paluszny. Springer-Verlag Berlin Heidelberg, 2002

Curves and Surfaces for CAGD, Fifth Edition: A Practical Guide / Gerald Farin. Morgan-Kaufmann, 2002

Languages necessary to complete the course:
english

Notes:

Past grade distribution
Total number of evaluated students: 133

A	B	C	D	E	FX
13,53	16,54	19,55	27,82	16,54	6,02

Lecturers: RNDr. Soňa Kudličková, CSc., RNDr. Martina Bátorová, PhD.

Last change: 25.01.2018

Approved by:

COURSE DESCRIPTION

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

Course ID: FMFI.KAG/1-MAT-551/10	**Course title:** Geometry for Graphics (1)

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

Number of credits: 5

Recommended semester: 5.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 512

A	B	C	D	E	FX
21,29	14,84	18,55	19,92	17,77	7,62

Lecturers: Mgr. Ľudovít Balko, 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.KAG/1-MAT-552/10	**Course title:** Geometry for Graphics (2)

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

Number of credits: 3

Recommended semester: 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: 304

A	B	C	D	E	FX
22,7	11,84	15,79	20,72	26,97	1,97

Lecturers: Mgr. Ľudovít Balko, 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.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.KI/2-INF-174/15	**Course title:** Graph Theory

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., II.

Prerequisites:

Recommended prerequisites: 1-INF-160 Introduction to combinatorics and graph theory

Course requirements: Approximate scale of evaluation: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 20/80maximum 20% of evaluation can be obtain by solving homoworks

Learning outcomes: The course will provide students with solid foundations of graph theory by proving key classical theorems and explaining the most important graph algorithms. Emphasis is also placed on motivation from other scientific disciplines and technology and possible applications of the covered topics.

Class syllabus: Basic terminology: trees, bipartite graphs, graph and labyrinth search. Eulerian graphs. matchings in graphs, König's theorem, Hall theorem and its corollaries. measuring of graph connectivity. Menger's theorem, Planar graphs, Euler's theorem. Kuratowski's theorem. Graph coloring: some NP-hard problems, greedy algorithm. Brooks' theorem. Vizing's theorem. Coloring of planar graphs. Flows, Ford–Fulkerson algorithm and its applications. Integer and group flows, relationship to coloring. Hamiltonian graphs. Chvátal's theorem. Random graphs, probabilistic models, properties of random graphs.

Recommended literature:

Languages necessary to complete the course: Slovak, English.

Notes:

Past grade distribution

Total number of evaluated students: 76

A	B	C	D	E	FX
38,16	18,42	17,11	15,79	9,21	1,32

Lecturers: doc. RNDr. Edita Mačajová, PhD., prof. RNDr. Martin Škoviera, 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.KAI/1-AIN-413/18	**Course title:** Graphs, Graphic Algorithms and Optimization

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: 4.

Educational level: I.

Prerequisites:

Recommended prerequisites: 1-AIN-160/15 Discrete Mathematics 2

Antirequisites: FMFI.KAI/1-AIN-413/15

Course requirements: Continuous assessment: graded homework, quizzes, activity at recitations, tests. The student must obtain at least 55% of points from the semester in order to take the final exam. Examination: an examination consisting of a written and an oral part. The student must obtain at least 50% of the points from the written part. Approximate scale: A 90%, B 80%, C 70%, D 60%, E 55% Scale of assessment (preliminary/final): 50/50

Learning outcomes: After completing the course, students will master the basic concepts of graph theory, several important graph algorithms and optimization algorithms and will be able to do a complex analysis of these algorithms.

Class syllabus: Basic concepts in graph theory, examples, properties, representation of graphs in a computer, Isomorphism of graphs Significant graph classes, trees Important graph algorithms for searching graphs, finding the optimal spanning tree of a graph, finding the shortest path in a graph, the problem of a business traveler, analysis of these algorithms Matching and flow in networks; Hall's theorem Implementation of some of these algorithms

Recommended literature: Introduction to Algorithms, 3rd Edition/ T. H. Cormen, C. E. Leiserson, R. L. Rivest, C. Stein. MIT Press (2009) Modern graph theory / Béla Bollobás. New York : Springer, 1998 Graph theory / Reinhard Diestel. Berlin : Springer, 2005 Lineárne programovanie / Ján Plesník, Jitka Dupačová, Milan Vlach. Bratislava : Alfa, 1990 Vlastné elektronické texty vyučujúceho predmetu zverejňované prostredníctvom web stránky predmetu. Linear programming/ V. Chvátal Zbierka príkladov z grafov a optimalizácie/T.Jajcayová, P. Náther - elektronic text

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 52

A	B	C	D	E	FX
28,85	21,15	13,46	17,31	5,77	13,46

Lecturers: doc. RNDr. Tatiana Jajcayová, PhD.

Last change: 26.06.2022

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.KAI/1-AIN-304/15	**Course title:** Introduction to Artificial Intelligence

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.

Prerequisites:

Course requirements: The course assessment consists of exercises (30%), project (20%) and final exam (50%). Student should get at least half of marks from exercises and project, respectively, in order to meet the minimal condition to sit the final written exam. Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0). Scale of assessment (preliminary/final): Practical work 50% (30% exercises + 20% for the project) / 50% final exam.

Learning outcomes: The course covers the basics of symbolic and nature-inspired methods of artificial intelligence. The objective is to provide the students with insight into the area of problem-solving by means of Artificial Intelligence. Theory is combined with practical exercises. Gained knowledge and skills can be further extended in related master programmes.

Class syllabus: In the first half of the course, we provide the description of simple rational agents, logical agents, uninformed and informed search in the solution space, the basics of game theory, problems with restrictive conditions, optimization, more complex agents capable of inference including the propositional logic and inference using the knowledge base. In the second half of the course, we tackle learning from examples: supervised learning, classification and regression, multilayer feedforward neural network and its applications, model selection, generalization, unsupervised learning and self-organization. We also introduce some nonparametric models, like K-means clustering and K-nearest neighbour method.

Recommended literature: [1] Russell, Stuart and Norvig, Peter: Artificial Intelligence: A Modern Approach (3rd Edition), Prentice Hall, USA, 2010. [2] Návrat, Pavol a kol..: Umelá inteligencia (3. vydanie), Vydavateľstvo STU, Bratislava, 2015.

Languages necessary to complete the course: English, Slovak

Notes:					
Past grade distribution Total number of evaluated students: 123					
A	B	C	D	E	FX
14,63	17,89	20,33	18,7	13,01	15,45
Lecturers: prof. RNDr. Ľubica Beňušková, PhD., doc. RNDr. Mária Markošová, PhD.					
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.KAI/1-AIN-132/12	**Course title:** Introduction to BSc Project

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: 1
Recommended semester: 5.
Educational level: I.
Prerequisites: FMFI.KAI/1-AIN-232/17 - Project (1) and FMFI.KAI/1-AIN-262/17 - Project (2)
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:
Past grade distribution   Total number of evaluated students: 584

A	B	C	D	E	FX
59,93	23,29	9,76	0,51	2,74	3,77

Lecturers: Mgr. Pavel Petrovič, PhD., RNDr. Andrej Blaho, PhD.
Last change: 24.10.2016
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-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: 3.

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-520/00	**Course title:** Introduction to Information Security

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

Number of credits: 4

Recommended semester: 6.

Educational level: I.

Prerequisites:

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

Learning outcomes:
The course provides an overview of information security, legal requirements for data protection and systems, threats and measures to eliminate the risks that arise from them. The student knows the classification of data, the method of risk analysis, the content of a security policy, the method of developing a security project as well as the basic standards and recommended procedures in the field of information security.

Class syllabus:
The role of information security. The major security attributes of information (confidentiality, availability, authenticity, integrity, privacy, etc.) Basic notions of information security (system, asset, threat, vulnerability, risk). Building a new or securing an existing IT system. Security projects (description of the system and of its environment, identification of relevant threats, qualitative risk analysis, contrameasures). Risk management (incident handling, disaster recovery, business continuity planning). Management of information security. Evaluation and certification of IT system/product. Introduction to cryptology and PKI.

Recommended literature:
1. Cybersecurity Body of Knowledge Resources & Publications (cybok.org)
2. NIST SP 800 series NIST Special Publication 800-series General Information
NIST
3. BSI Štandardy BSI - IT-Grundschutz (bund.de)
4. SO/IEC 27001 — Information security management systems — Requirements.
5. ISO/IEC 27002 — Code of practice for information security management.
6. ISO/IEC 27005 — Information security risk management.
7. Zákon č. 69/2018 Z. z. o kybernetickej bezpečnosti a o zmene a doplnení niektorých zákonov

8. Vyhláška Národného bezpečnostného úradu č. 362/2018, ktorou sa ustanovuje obsah bezpečnostných opatrení, obsah a štruktúra bezpečnostnej dokumentácie a rozsah všeobecných bezpečnostných opatrení

9. Zákon č. 95/2019 Z. z. o informačných technológiách vo verejnej správe a o zmene a doplnení niektorých zákonov

10. Vyhláška Úradu podpredsedu vlády Slovenskej republiky pre investície a informatizáciu č. 179/2020 Z. z., ktorou sa ustanovuje spôsob kategorizácie a obsah bezpečnostných opatrení informačných technológií verejnej správy

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 973

A	B	C	D	E	FX
12,23	10,28	21,79	33,2	21,99	0,51

Lecturers: doc. RNDr. Daniel Olejár, PhD., RNDr. Michal Rjaško, PhD.

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.KAI+KDMFI/1- AIN-211/10	**Course title:** Introduction to Theoretical Informatics

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: 4.

Educational level: I.

Prerequisites: FMFI.KAI/1-AIN-160/15 - Mathematics (3) - Discrete Mathematics and FMFI.KDMFI+KAI/1-AIN-210/15 - Algorithms and Data Structures

Antirequisites: FMFI.KI/1-INF-215/00

Course requirements:
 Continuous assessment: papers
 Examination: written-oral examination
 Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%

Learning outcomes:
 Introduction to theoretical computer science, to acquaint with classical and current areas of research, in which there are basic questions: Can all problems be solved algorithmically? How effective is the solution? What are the solution techniques?
 After completing the course, students will know the formal definition of the computational medal (deterministic finite state machine, Turing machine and their nondeterministic variants), they will be able to prove that their proposed KA is the correct solution required by the assignment, or that the KA that solves the given problem does not exist. They will be able to modularly design KA and systematically also TS.
 The end of the course introduces the basics of computability and the method of problem reduction.

Class syllabus:
 Brief introduction to the main areas of theoretical computer science:
 - Alphabets, Words, Languages and algorithmic problems
 - Finite machines
 - Turing machines
 - Computability (introduction)

Recommended literature:

Languages necessary to complete the course:

Notes:

| **Past grade distribution** | | | | | |
| Total number of evaluated students: 870 | | | | | |
A	B	C	D	E	FX
5,52	11,72	15,17	22,07	30,46	15,06

Lecturers: RNDr. Michal Winczer, PhD., RNDr. Andrej Blaho, 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/2-INF-187/15	**Course title:** Introduction to Theory of Programming

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: 4

Recommended semester: 4.

Educational level: I., II.

Prerequisites:

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

Learning outcomes:
Student will be familiar with principles of program abstraction with the goal to analyse properties of program control structures independently from a particular program interpretation, principles and methods of proving correctness of program correctness, foundations of formal semantics of imperative and recursive programming languages

Class syllabus:
Program schemes
- basic notions - standard scheme, interpretation, Herbrand interpretations, properties of program schemes
- decidability of basic properties - basic undecidability results, subclasses of schemes with decidable properties (free and Yanov schemes)
- comparative schematology - relations between classes of standard, structured and recursive schemes, partially interpreted schemes
Program correctness
- partial and total correctness - invariants, inductive formulas, weakest precondition, strongest postcondition
- proof methods - Floyd method, Hoare-like proof systems, used induction principles, proving properties of recursive programs
- systematic development of correct programs
Semantics of programs and languages
- program meaning - principles of operational, denotational and axiomatic semantics
- semantic domains - algebraic structure, construction of domains
- formal semantics - operational and denotational semantics of imperative and recursive programs, types and semantics
- comparison of operational and denotational semantics - imperative programs, recursive programs (correctness of computational rules, criteria of correctness)

Recommended literature:
Zohar Manna. Mathematical theory of computation. McGraw Hill, 1974
Prívara, I.: Úvod do teórie programovania, lecture notes, 2014 – pdf version

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 14

A	B	C	D	E	FX
42,86	7,14	7,14	7,14	28,57	7,14

Lecturers: RNDr. Igor Prívara, CSc.

Last change: 13.09.2015

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.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.KAG+KAI/1- AIN-152/15	**Course title:** Linear Algebra

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.

Prerequisites: FMFI.KMANM/1-AIN-188/17 - Mathematics (2) - Mathematical Analysis and FMFI.KAI/1-AIN-160/15 - Mathematics (3) - Discrete Mathematics

Course requirements:
Continuous assessment: graded homework, quizzes, activity at recitations, tests. The student must obtain at least 55% of points from the semester in order to take the final exam.
Examination: an examination consisting of a written and an oral part. The student must obtain at least 50% of the points from the written part. Approximate scale: A 90%, B 80%, C 70%, D 60%, E 55%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
After completing the course, students will be familar with the fundamentals of linear algebra needed in informatics and computer graphics.

Class syllabus:
Matrices and matrix operations, determinants.
The concept of a group, specific matrix groups.
Systems of linear equations.
Solution spaces, vector spaces.
Scalar product, vector product in 3-dimensional space.
Linear and affine spaces.
Eigenvectors and eigenvalues.

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

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 71

A	B	C	D	E	FX
38,03	26,76	18,31	9,86	4,23	2,82

Lecturers: doc. RNDr. Tatiana Jajcayová, PhD., doc. RNDr. Róbert Jajcay, DrSc.

Last change: 26.06.2022

Approved by:

COURSE DESCRIPTION

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

Course ID: FMFI.KAI/1-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.KAI/1-AIN-121/15	**Course title:** Mathematics (1) - Introduction to Mathematical Reasoning

Educational activities:
  Type of activities: course
  Number of hours:
   per week: 6 **per level/semester:** 78
  Form of the course: on-site learning

Number of credits: 8

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: 1721

A	B	C	D	E	FX
7,38	9,88	21,15	26,21	15,05	20,34

Lecturers: doc. RNDr. Tatiana Jajcayová, PhD., Ing. Ján Komara, PhD., Mgr. Peter Náther, PhD., doc. RNDr. Mária Markošová, PhD., Mgr. Andrej Mihálik, PhD., prof. RNDr. Mária Lucká, 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- AIN-188/17	**Course title:** Mathematics (2) - Mathematical Analysis

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

Number of credits: 7

Recommended semester: 2.

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: 430

A	B	C	D	E	FX
10,23	13,26	20,0	27,91	20,7	7,91

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., PaedDr. Peter Vankúš, PhD., Ing. Ján Komara, PhD., Mgr. Emília Miťková, PhD., Mgr. Magdaléna Janeček Kubešová, PhD.

Last change: 21.09.2018

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-160/15	**Course title:** Mathematics (3) - Discrete Mathematics

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: FMFI.KAI/1-AIN-121/15 - Mathematics (1) - Introduction to Mathematical Reasoning
Antirequisites: FMFI.KAI/1-AIN-160/00
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:

Past grade distribution
Total number of evaluated students: 1294

A	B	C	D	E	FX
5,56	7,5	17,85	27,51	24,88	16,69

Lecturers: doc. RNDr. Tatiana Jajcayová, PhD., Ing. Ján Komara, PhD., Mgr. Peter Náther, PhD., doc. RNDr. Dušan Guller, 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-412/15	**Course title:** Mathematics (4) - Logic for Computer Science

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: FMFI.KAI/1-AIN-160/15 - Mathematics (3) - Discrete Mathematics

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 1376

A	B	C	D	E	FX
14,03	9,74	14,68	19,84	26,53	15,19

Lecturers: Mgr. Ján Kľuka, PhD., RNDr. Jozef Šiška, PhD., doc. RNDr. Martin Homola, PhD., Mgr. Júlia Pukancová, PhD., Mgr. Iveta Bečková

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-472/20	**Course title:** Mobile Application Developement

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.

Prerequisites:

Antirequisites: FMFI.KAI/1-AIN-472/15

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 232

A	B	C	D	E	FX
25,86	3,88	13,36	18,97	33,19	4,74

Lecturers: RNDr. Peter Borovanský, PhD.

Last change: 04.02.2022

Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAI/1-MAT-570/15	Course title: Modelling and Rendering Techniques

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.

Prerequisites:

Antirequisites: FMFI.KAI/1-MAT-570/00

Course requirements: Continuous assessment: homework, individual work Examination: written, oral Indicative assessment scale: A 92%, B 84%, C 76%, D 68%, E 60% For the semester, the student can get 50% for exercises, 30% for homework, the final written exam has a weight of 20% and the oral exam is voluntary for 20%. The student must solve at least 30% of each homework in order to pass the final written exam. Grading: 92-100 A, 84-91 B, 76-83 C, 68-75 D, 60-67 E. Details on the subject page. Scale of assessment (preliminary/final): 30/70

Learning outcomes: It acquaints students with the basic principles of geometric modeling, especially modeling of rigid teties, with the possibilities of local modifications of bodies and global operations on bodies represented by common techniques. Students will deepen their knowledge of rendering techniques.

Class syllabus: The concept of geometric, quantitative and organizational model. Hierarchy in geometric models. Tools for defining objects, modifying them and storing them. Primitive (basic) objects and their most well-known characteristics. Local modifications and global operations with solids. CSG representation of objects (standard CSG primitives, regularized Boolean operations, identity transformations). Algorithm for construction of CSG - objects. Boundary representations of bodies (B - rep). Euler - Poincare formula and its meaning. Platonic bodies. Euler's operators. Boolean operations at border representations. Wall, edge and top representations of polyhedrons with non-variety surface. Solid modeling with polygonal meshes. Body modeling by sweeping methodology (extruded solids). Rendering techniques for shaded and color images. Object description-based rendering using implicit functions and CSG description. Basic principles of voxel rendering, image - oriented rendering and photo - modeling. Rendering of polygonal meshes. Rendering based on object or image redistribution techniques.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 41

A	B	C	D	E	FX
26,83	31,71	12,2	9,76	12,2	7,32

Lecturers: prof. RNDr. Roman Ďurikovič, 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.KAI/1-AIN-530/00	**Course title:** Multimedia

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

Number of credits: 2

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:
 Multimedia, basic terms, examples, multimedia production, computer graphics - basic terms, multimedia formats, software for image manipulation, animation - introduction, animation formats, software for animation production, audio - basic terms, audio formats, audio editing software, digital video - basic terms, DV formats, DV production software, authoring software.

Recommended literature:
 Holsinger, E.: Jak pracují multimedia, Brno, UNIS 1995
 Kireš, M., Šnajder, Ľ., Kalakay, R.: Multimédiá pre učiteľa, Bratislava, ÚIPŠ 2002
 Ružický, E.: Úvod do počítačovej grafiky, Bratislava, UK 1991
 Salanci, Ľ.: Práca s grafikou. Bratislava, SPN 2000
 www.w3schools.com/media
 www.scantips.com

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 918

A	B	C	D	E	FX
62,09	27,56	7,3	0,54	0,11	2,4

Lecturers: Ľubomír Lúčan, CSc.

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-675/00	**Course title:** Philophy of Internet

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:

Course requirements:

Learning outcomes:

Class syllabus:
 Brief history of information
 Internet and physical space, virtualization
 Internet and authors
 Small worlds and internet
 Power of searching machines
 Wikinomics and Wisdom of Crowd
 Internet and social networks

Recommended literature:
 David A. Vise, Mark Malseed, The Google Story, Pragma, 2007
 Pavol Rankov, Information society - perspectives, problems, paradoxes (in Slovak), LCA
 Publishers Group, Levice, 2007
 Radana Divínová, Cybersex - Form of Internet Communication (in Czech), TRITON, Praha,
 2005
 Barabási, Albert-László, Linked, Paseka, Praha, 2005
 Sherry Turkle, Life on the Screen, Identity in the Age of the Internet, Simon & Schuster, New
 York, 1995
 Hubert L. Dreyfus, On the Internet, Thinking in Action, Routledge, Taylor & Francis Group,
 London and New York, 2001
 David Weinberger, Small Pieces Loosely Joined {a unified theory of a web}, Perseus Publishing,
 2002
 John Battelle, The Search, Portfolio, Penguin Books, New York, 2006
 Don Tapscott, Anthony D. Williams, WIKINOMICS, How Mass Collaboration Changed
 Everything, Portfolio, Penguin Books, New York, 2006
 James Surowiecki, The Wisdom of Crowds, Abacus, Londom 2004

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 615

A	B	C	D	E	FX
68,29	13,17	8,94	3,41	0,81	5,37

Lecturers: Ing. František Gyarfaš, CSc.

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.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.KAI/1-AIN-167/15	**Course title:** Practical Classes in Robotics

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: 3
Recommended semester: 3.
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
74,07	7,41	12,96	1,85	1,85	1,85

Lecturers: Mgr. Pavel Petrovič, PhD.
Last change: 21.02.2022
Approved by:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID: FMFI.KAMŠ/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.KAI/1-AIN-130/16	**Course title:** Programming (1)

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: 9

Recommended semester: 1.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KAI/1-AIN-130/13

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 974

A	B	C	D	E	FX
26,8	10,57	9,45	8,62	14,37	30,18

Lecturers: RNDr. Andrej Blaho, PhD., PaedDr. Daniela Bezáková, PhD., PaedDr. Andrea Hrušecká, PhD.

Last change: 07.12.2021

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-170/13	**Course title:** Programming (2)

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

Number of credits: 6
Recommended semester: 2.
Educational level: I.
Prerequisites: FMFI.KAI/1-AIN-130/16 - Programming (1) or FMFI.KAI/1-AIN-130/16 - Programming (1)
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:

Past grade distribution
Total number of evaluated students: 1481

A	B	C	D	E	FX
29,78	9,45	11,07	12,36	20,19	17,15

Lecturers: RNDr. Andrej Blaho, PhD.
Last change: 08.12.2021
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-171/10	Course title: Programming (3)

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

Number of credits: 5

Recommended semester: 3.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus: - Data structures, Functions, Global and Local Variables - Structures, Classes, Types - Objects, Polymorphism, Object Oriented Design - Methods, Virtual Methods and Classes, Arguments - Constructors, Destructors - Operators and Overloading - Class Hierarchies, Abstract Classes, Inheritance - Pointers and Pointer Arithmetic - Streams - Templates and STL - Exceptions - Parallelism

Recommended literature: Gottschling, Peter, Discovering Modern C++, The C++ In-Depth Series, Addison-Wesley, 2016 2. Meyers, Scott, Effective Modern C++, 42 Specific Ways to Improve Your Use of C++11 and C++14, O'Reily, 2015 3. Stroustrup, Bjarne, A Tour of C++, The C++ In-Depth Series, Addison-Wesley, 2014 4. Meyers, Scott, Effective C++, 50 Specific Ways to Improve Your Programs and Design, Addison-Wesley, 2002 5. Eckel, Bruce, Thinking in C++, 2nd ed., Prentice Hall, 2000 (existuje online verzia - http://www.datastore.cz/bruceeckel/) 6. Meyers, Scott, More Effective C++: 35 New Ways to Improve Your Programs and Designs, Addison-Wesley, 1995

7. Martin, Robert C., Clean Code: A Handbook of Agile Software Craftsmanship, Robert C. Martin Series, Prentice Hall, 2009
8. Holub, Allen I., Enough Rope to Shoot Yourself in the Foot, Rules fro C and C++ Programming, McGraw-Hill, 1995
9. Holub, Allen I., The C Companion, Prentice-Hall, Inc., New Jersey, 1987

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 1291

A	B	C	D	E	FX
29,36	15,18	10,61	11,7	18,9	14,25

Lecturers: Ing. František Gyarfaš, CSc.

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-172/00	**Course title:** Programming (4)

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

Number of credits: 5

Recommended semester: 4.

Educational level: I.

Prerequisites:

Course requirements:
A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 70% (homeworks, excercises, projekt) 30% (exam)

Learning outcomes:

Class syllabus:
- basic programming constructs of the language, comparison with C++
- basic data types and language components
- fundamental JAVA libraries
- object-orient programming in JAVA
- data structures and algoritms
- threads and concurrent programs
- design of applets and applications with user's interface - JavaFX

Recommended literature:
Eckel,B.: Thinking in Java, Prentice Hall, 1997,
Goodrich,M.T, Tamassia,R.: Data Structures and Algorithms in Java, 3rd Ed., John Wiley & Sons, 2004,www.datastructures.net,
Herout,P.: Učebnice jazyka Java, Kopp,2003,
Weiss M.A.: Data Structures & Problem Solving Using Java, Addison Wesley, 1998.

Languages necessary to complete the course:
 slovak

Notes:

Past grade distribution
 Total number of evaluated students: 649

A	B	C	D	E	FX
32,97	10,17	18,95	19,26	12,63	6,01

Lecturers: RNDr. Peter Borovanský, PhD.

Last change: 24.06.2022
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-302/17	**Course title:** Programming (5)

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: 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: 185

A	B	C	D	E	FX
62,16	4,86	9,19	8,65	10,27	4,86

Lecturers: doc. RNDr. Ľubomír Salanci, PhD.
Last change: 09.01.2019
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-430/15	**Course title:** Programming Paradigms

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.

Prerequisites:

Antirequisites: FMFI.KAI/1-AIN-430/00

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 362

A	B	C	D	E	FX
24,59	6,91	11,6	19,61	36,19	1,1

Lecturers: RNDr. Peter Borovanský, PhD.

Last change: 30.01.2020

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-232/17	**Course title:** Project (1)

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

Number of credits: 1

Recommended semester: 2.

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: 520

A	B	C	D	E	FX
46,92	13,27	13,08	5,38	7,12	14,23

Lecturers: Ľubomír Lúčan, CSc., doc. RNDr. Damas Gruska, PhD.

Last change: 04.10.2019

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-262/17	**Course title:** Project (2)

Educational activities: 　**Type of activities:** independent work 　**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: FMFI.KAI/1-AIN-232/17 - Project (1)
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:
Past grade distribution 　Total number of evaluated students: 383

A	B	C	D	E	FX
47,26	20,37	10,44	7,31	5,74	8,88

Lecturers: Ľubomír Lúčan, CSc., doc. RNDr. Damas Gruska, PhD.
Last change: 04.10.2019
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 A1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 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 A2 (Ольга Долматова, Екатерина Новачац) a Short Stories in Russian (Olly Richards, Alex Rowlings)

Languages necessary to complete the course:

Notes:

Past grade distribution   Total number of evaluated students: 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.KAI/1-AIN-315/15	**Course title:** Semistructured Data (XML, JSON and NoSQL)

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

Number of credits: 4

Recommended semester: 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: 0

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

Lecturers: RNDr. Martin Baláž, PhD., Mgr. Ján Kľuka, 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.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: 2.

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.KAI/1-AIN-470/15	**Course title:** Specification and Verification of Programs

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: 6.

Educational level: I., II.

Prerequisites:

Antirequisites: FMFI.KAI/1-AIN-470/00

Course requirements:
 Preliminary assessment: two tests 60%.
 Final exam: test 40%.
 Scale: A 90%, B 80%, C 70%, D 60%, E 50%.
 Scale of assessment (preliminary/final): 60/40

Learning outcomes:
 The course develops students' ability to demonstrate the correctness of programs, formally specify the required properties and proving them using various methods, particularly structural induction. Graduates gain knowledge of a particular formalization of recursive programs, proving their properties within a single logical theory Peano arithmetic. They also get hands-on experience with the specification and verification of a large number of programs.

Class syllabus:
 1. Declarative Programming. Primitive recursion. Recursion with measure. Iterative recursion. Recursion on notation. Pairing function and arithmetization. Structural recursion.
 2. Specification-verification System. Peano Arithmetic. Mathematical induction. Extensions of arithmetic. Derived induction principles: complete induction, measure induction, structural induction.
 3. Data Structures. Strings. Lists. Basic operations over lists. Sorting of lists. Applications of lists. Binary trees. Basic operations over binary trees. Binary search trees. Applications of trees. Symbolic expressions. Interpreter of programming language. Universal function.

Recommended literature:
 [1] Specification and Verification of Programs / Ján Komara. Online.
 [2] Introduction to Declarative Programming / Ján Kľuka. In Slovak. Online.

Languages necessary to complete the course:
 slovak, english

Notes:

Past grade distribution Total number of evaluated students: 58					
A	B	C	D	E	FX
18,97	1,72	6,9	8,62	32,76	31,03

Lecturers: doc. RNDr. Damas Gruska, PhD., Ing. Ján Komara, 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.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.KAMŠ/1-MXX-501/15	**Course title:** Statistics for Non-statisticians

Educational activities: 　**Type of activities:** course 　**Number of hours:** 　　**per week:** 2　**per level/semester:** 26 　**Form of the course:** on-site learning
Number of credits: 2
Recommended semester: 6.
Educational level: I.
Prerequisites:
Antirequisites: FMFI.KAMŠ/1-MXX-501/14
Course requirements:
Learning outcomes:
Class syllabus:
Recommended literature:
Languages necessary to complete the course:
Notes:
Past grade distribution 　Total number of evaluated students: 34

A	B	C	D	E	FX
76,47	8,82	2,94	2,94	0,0	8,82

Lecturers: doc. Mgr. Ján Mačutek, PhD.
Last change:
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.KAI/1-AIN-316/16	**Course title:** Technologies of Digital Fabrication

Educational activities: **Type of activities:** course **Number of hours:**   **per week:** 3 **per level/semester:** 39 **Form of the course:** on-site learning
Number of credits: 3
Recommended semester: 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: 77

A	B	C	D	E	FX
70,13	16,88	5,19	3,9	3,9	0,0

Lecturers: Mgr. Pavel Petrovič, PhD., Ing. Jozef Vaško
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.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:

COURSE DESCRIPTION

Academic year: 2021/2022	

University: Comenius University Bratislava	

Faculty: Faculty of Mathematics, Physics and Informatics	

Course ID: FMFI.KAI/1-AIN-244/15	**Course title:** Web Applications (2)

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

Number of credits: 4

Recommended semester: 4.

Educational level: I.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 270

A	B	C	D	E	FX
48,89	8,89	11,11	7,41	11,11	12,59

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.KDMFI/1-AIN-168/15	**Course title:** Web Applications in Praxis

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

Number of credits: 4

Recommended semester: 5.

Educational level: I., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
 Total number of evaluated students: 238

A	B	C	D	E	FX
31,09	18,91	17,65	17,65	9,66	5,04

Lecturers: Mgr. Martin Krupa, Mgr. Robert Mráz, Mgr. Ing. Matúš Tuna, PhD., Mgr. Endre Hamerlik

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.KAG/1-MAT-560/00	**Course title:** Web Graphics

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

Number of credits: 5

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements:
For the semester, the student can get 50% for exercises, 20% for midterm and the final written exam has a weight of 30%. The student must obtain at least half of the points for the exercises as well as for the project in order to pass the final written exam.
Grading: A (100-91), B (90-81), C (80-71), D (70-61), E (60-51), Fx (50-0).
Scale of assessment (preliminary/final): Weight of midterm / final assessment: Mid-term assessment 20% (midterm) / + 50% project 30% final exam.

Learning outcomes:
The course offers knowledge and skills in the dynamically developing field of Internet communication through multimedia objects. Graduates will get acquainted with the rules and methods of effective authoring work and the most modern technologies in accordance with the recommendations of the ACM Computing Curriculum.

Class syllabus:
1. Basic definitions. Historic survey, state-of-the art and the future of WWW. Semantic Web a Digital Libraries. Mobile communication. Security, legal and social aspects. Webby awards.
2. Client-server architecture. Dominant web services and technologies. SGML, HTML, VRML, UML. Java, php, ASP.NET and others. Examples of proper use. MIME formats and RFC standards. WWW Consortium.
3. Text creation, digital typography and DTP. On-line publishing authoring legal aspects.
4. Creation and use of pictorial data for WWW.
5. WWW sound processing and applications.
6. Internet animations and video.
7. WWW virtual interaction. Face demo by Ken Perlin. WWW as a procedural sketch book.
8. Web design styles and rules after A. Glassner.
9. 3D web graphics, VRML a X3D.
10. Virtual galleries, gardens, thematic parks and chat rooms.
11. Social and philosophic aspects of virtual environments. Netiquette. Third wave by A. Toffler. History of virtual reality (Gibson, Krueger, Lanier, CAVE...). Cult movie Matrix and implications of its message.

12. Interakcia, navigácia a kooperácia vo virtuálnych prostrediach. Distribuovaná VR. Hry a simulátory.
13. Spájanie obrazu s textom. Vizuálna kritika web stránok.
14. Virtuálne mestá. Akvizícia, konštrukcia, prezentácia, aplikácie.
15. Groupware. Skupinová komunikácia. Avatari a on-line komunity. MPEG-7 a MPEG-21.

Recommended literature:
CGEMS (web stránka ACM SIGGRAPH, www.siggraph.org).
W3Schools tutorials (HTML, SVG...).
BERNERS-LEE, T. Semantic Web, Scientific American, May 2001.
SIGGRAPH course notes by B. Mitchell, A. Glassner and K. Perlin.
Class materials available from the class web page.

Languages necessary to complete the course:
English, Slovak

Notes:
The class is eventually taught in a distant mode.

Past grade distribution
Total number of evaluated students: 955

A	B	C	D	E	FX
23,04	28,17	23,46	11,62	4,82	8,9

Lecturers: doc. RNDr. Andrej Ferko, PhD., Mgr. Marcel Makovník

Last change: 22.06.2022

Approved by: