CONTENT

1. Academic English	4
2. Administration and security of computer networks	6
3. Administration of GNU/Linux	7
4. Administration of OS	8
5. Administration of Windows	10
6. Advanced programming in Python	12
7. Algorithms and data structures	14
8. Automata and formal languages	16
9. Bachelor Thesis and its Defence	18
10. Coding and multimedial data transition	19
11. Communicative Competence in English	20
12. Communicative Grammar in English	22
13. Communicative Grammar in German Language	23
14. Computational Physics I	24
15. Computational Physics II	26
16. Computational and cognitive neuroscience I	28
17. Computer and telecommunication networks	30
18. Computer architecture	31
19. Computer network Internet	33
20. Concurrent programming	35
21. Cryptographic protocols	37
22. Cryptographic systems and their applications	
23. Database systems	41
24. Database systems	43
25. Development of mobile applications	45
26. Discrete mathematics for informaticians	46
27. English Language of Natural Science.	48
28. Essentials of ABAP	50
29. Essentials of the SAP System for Users	51
30. Essentials of the SAP Technology	53
31. Forensic analysis	55
32. Functional programming	56
33. GRID computing.	57
34. Geographic Information Systems	58
35. Image analysis	60
36. Informatics for medicine	61
37. Informatics for medicine	62
38. Interdisciplinary applications of informatics	63
39. Internet of Things	64
40. Introduction to Study of Sciences	65
41. Introduction to computer graphics	66
42. Introduction to information security	67
43. Introduction to law for informatics.	68
44. Introduction to neural networks.	69
45. Introduction to study of informatics.	71
46. Legal aspects of electronic commerce.	72
47. Legal aspects of informatics	73
48. Logic programming	75

49.	MATLAB and neurocognition	76
50.	Management of information systems	. 78
51.	Mathematical foundations of informatics I	. 79
52.	Mathematical foundations of informatics II	81
53.	Modern programming languages	83
54.	Modern web technologies	85
55.	Network and communication security	87
56.	Nontraditional Optimization Techniques I	. 88
57.	Nontraditional Optimization Techniques II.	90
58.	Numerical Methods	91
59.	Operating systems	93
60.	Parallel and distributed systems.	. 95
61.	Physical Principles of Medicine Technique.	. 96
62.	Principles of Computers, Logic Circuits	97
63.	Principles of computers	. 98
64.	Pro-seminar to bachelor thesis	100
65.	Proces modelling	102
66.	Professional experience.	104
67.	Programming language C	105
68.	Programming of robotic kits	107
69.	Programming of web-pages	109
70.	Programming, algorithms, and complexity	111
71.	Programming, algorithms, and complexity	113
72.	Programming, algorithms, and complexity	115
73.	Project I	117
74.	Project II.	118
75.	Project management	120
76.	Resolving computer security incidents	121
77.	Seaside Aerobic Exercise.	122
78.	Security and administration of computer systems	124
79.	Security of computer systems and data	125
80.	Seminar in network programming	126
81.	Seminar on computer graphics	127
82.	Seminar to operation systems	128
83.	Software and information system	130
84.	Software engineering.	131
85.	Software engineering	132
86.	Special seminar to bachelor thesis	133
87.	Special seminar to bachelor thesis	135
88.	Specialized seminar to bachelor thesis	137
89.	Specialized seminar to bachelor thesis	138
90.	Sports Activities I	139
91.	Sports Activities II	141
92.	Sports Activities III	143
93.	Sports Activities IV	145
94.	Statistical Methods of Data Analysis	147
95.	Structure formats and representation of data	148
96.	Student scientific conference	150
97.	Summer Course-Rafting of TISA River.	151

98. Survival Course	153
99. Symbolic logic	
100. Testing and verification of programs	156
101. Thesis in informatics	158
102. Thesis in informatics	159
103. Typographical systems	
104. User environments of operating systems	
105. Web and a development of user environment	164

University: P. J.	Šafárik Univers	sity in Košice			
Faculty: Faculty	of Science				
Course ID: CJP PFAJAKA/07	/ Course n	ame: Academic I	English		
Course type, sc Course type: F Recommended Per week: 2 Pe Course method	ope and the me Practice I course-load (h er study period d: combined, pr	thod: nours): : 28 esent			
Number of ECT	FS credits: 2				
Recommended	semester/trime	ster of the cours	e:		
Course level: I.,	II., N				
Prerequisities:					
Combined meth Active classroon 1 test (10th we epidemiological Presentation on Final evaluation Grading scale: A	od of teaching (m participation, eek), no retake situation – onli chosen topic (in - average assess A 93-100%, B 8	classroom/distand assignments hand (in classroom, ne) case of distance sment of test (40% 6-92%, C 79-85%	ce) led in on time, 2 in case of dis learning - onlin 6), essay (30%) 6, D 72-78%, E	2 absences tolerate tance learning du e thorugh MS Tea and presentation 65-71%, FX 64%	ed ue to worsened ams) (30%). and less
Learning outco	mes:				
Brief outline of	the course:				
Recommended Seal B.: Acader T. Armer :Camb M. McCarthy M Zemach, D.E, R Olsen, A. : Acti www.bbclearnin Cambridge Aca	literature: nic Encounters, oridge English fo I., O'Dell F A umisek, L.A: A ve Vocabulary, I ngenglish.com demic Content I	CUP, 2002 or Scientists, CUF cademic Vocabula cademic Writing, Pearson, 2013 Dictionary, CUP, 2	P 2011 ary in Use, CUF Macmillan 200 2009	2008 5	
Course languag English languag	e: e, level B2 acco	ording to CEFR.			
Notes:					
Course assessm Total number of	ent assessed studer	nts: 380			
А	В	С	D	Е	FX
33.68	22.11	15.53	10.0	6.58	12.11
Provides: Mgr.	Viktória Mária S	Slovenská			
Date of last mo	dification: 17.0	9.2020			

Approved:

University: P. J.	Šafárik Univers	ity in Košice				
Faculty: Faculty	y of Science					
Course ID: ÚIN SOP1/15	IF/ Course na	ame: Administra	tion and security	of computer netw	works	
Course type, sc Course type: I Recommended Per week: 1 / 2 Course method	ope and the met Lecture / Practice I course-load (h 2 Per study period: present	thod: ours): od: 14 / 28				
Number of EC	Number of ECTS credits: 4					
Recommended	semester/trimes	ster of the cours	e: 6.			
Course level: I.						
Prerequisities:	ÚINF/SKB1/15					
Conditions for	course completi	on:				
Learning outco	mes:					
Brief outline of	the course:					
Recommended	literature:					
Course languag	ge:					
Notes:						
Course assessm Total number of	ent f assessed studen	ts: 0				
А	В	С	D	Е	FX	
0.0	0.0	0.0	0.0	0.0	0.0	
Provides: doc. H	RNDr. Jozef Jirás	sek, PhD., RNDr.	Rastislav Krivo	š-Belluš, PhD.		
Date of last mo	dification: 03.05	5.2015				
Approved:				-		

University: P. J. Šafá	rik University in Košice		
Faculty: Faculty of S	cience		
Course ID: ÚINF/ ADL1/15	Course name: Administr	ation of GNU/Linux	
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent		
Number of ECTS cr	edits: 2		
Recommended seme	ster/trimester of the cou	·se: 6.	
Course level: I.			
Prerequisities: ÚINF	/AOS1/15 and leboÚINF/	ZOS1/19	
Conditions for cours	e completion:		
Learning outcomes:			
Brief outline of the c	ourse:		
Recommended litera	ature:		
Course language:			
Notes:			
Course assessment Total number of asses	ssed students: 0		
abs	n	neabs	Z
0.0	0.0	0.0	0.0
Provides: RNDr. PhD	Dr. Peter Pisarčík		
Date of last modifica	tion: 03.05.2015		
Approved:			

University: P I Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ AOS1/15	Course name: Administration of OS
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course: 5.
Course level: I., II.	
Prerequisities:	
Conditions for cours	e completion:
Learning outcomes: To be able to install L several network dean	inux based system, divide disks, to know how to install, configure and manage nons.
 Brief outline of the c 1. Introduction to net 2. SSH 3. Routing and NAT 4. Introduction to Fire 5. Advanced firewall 6. DHCP server 7. Web server (apach 8. Monitoring Server 9. Samba Server 10. Mail server (smtp 11. Proxy server 12. Windows server 13. Windows Server 14. Introduction to V 	ourse: work services ewall settings e, php, mysql) (SNMP, MRTG) o, imap, postfix) II. irtualization (Hyper-V OpenVZ)
Recommended litera 1. Linux Documentat 2. Stanek, W.: Windo 3. Shah, S. Soyinka, 4. Nemeth, E., et al.:	ture: ion Project, 4 updated edition. Brno: Computer Press (2008). ws Server 2012 Inside Out. Microsoft Press (2013) W. Administration Linux. Grade (2007) Linux. Brno: Computer Press (2008)
Course language: Slovak or english	
Notes:	

Course assessment Total number of assessed students: 28					
A B C D E FX					
57.14	21.43	14.29	0.0	7.14	0.0
Provides: RNDr. JUDr. Pavol Sokol, PhD., RNDr. Tomáš Bajtoš					
Date of last modification: 10.02.2021					
Approved:					

Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Administration of Windows
ADW1/15	

Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities: (ÚINF/OSY1/15,ÚINF/AOS1/15) and leboÚINF/ZOS1/19

Conditions for course completion:

Practics activity, home assignment, test. Final test.

Learning outcomes:

Deep insight into system concepts and components of operating system Windows along with the practical techniques concerning with configuration and management corresponding to the professional administrator level. Completing the course allows to become oriented and experienced in the Active Directory administration, net services configuration and management and in the virtualization concepts.

Brief outline of the course:

Active Directory infrastructure and its management and configuration. Zone configuration, DNS setup, replication. Trust configuration. Roles and services. Account management, group policy, auditing. Certification authority and management. Network configuration and network services. DHCP, routing, firewall, remote access configuration. Monitoring and security breach handling. Licences for multiple remote access. Website configuration and management. FTP and mail server configuration. Data Storage configuration, filesystems and backup, network services. Installing and configuring devices, monitoring system health and settings. System log. Creating system images and image recovery. Installing and activating distribution. Virtualization support, installing and configuring virtual machines. Configuring access to network, memory and disk resources. Clustering.

Recommended literature:

 J. C. Mackin, T. Northrup: MCTS self-paced training kit (exam 70-642) : configuring Windows server 2008 network infrastructure, Microsoft Press, 2008, ISBN 0-7356-2512-3.
 S. Reimer, M. Mulcare, C. Kezema, B. Wright: Windows server 2008 Active Directory resource kit, Microsoft Press, 2008, ISBN 0-7356-2515-8.

3. D. Holme: Windows administration resource kit: productivity solutions for IT professionals, Microsoft Press, 2008, ISBN 0-7356-2431-3.

Course language:

Notes:

Course assessment Total number of assessed students: 0					
abs n neabs z					
0.0	0.0	0.0	0.0		
Provides: PaedDr. Ján Guniš, PhD.					
Date of last modification: 03.05.2015					
Approved:					

University: P. J. Safarik Un	iversity in	Kosice
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Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Advanced programming in Python
PPPy/18	

Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28

Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4., 6.

Course level: I.

Prerequisities: ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15 and leboÚINF/PRG1/15

Conditions for course completion:

At least 50 % of the marks in the continuous assessment

A minimum of 50 % marks in the mid-term and end-of-semester practical tests

or The fire

The final project - 100%

Learning outcomes:

Implement solutions to selected problems in Python using available modules. Use and implement non-trivial algorithms to solve selected problems. Use an object-oriented approach to problem solving. Program in Python in an object-oriented manner using Python specifics. Test programs. Implement parallel computing.

Brief outline of the course:

1. Introduction to the environment, basic features of Python, simple and structured data types.

2. Input, output, function definition, lambda function, generator notation, function as parameter, string formatting.

3. Control structures, iterating over data structures, context manager.

4. Exception handling and exception raising. Philosophy of exceptions in Python.

5. Working with files. Serialization and deserialization of data - json and pickle protocol. Text and binary files. Manipulation with files. Open data.

6. Object-oriented programming 1. Design of custom classes, special methods, properties, philosophy of accessing methods and attributes.

- 7. Object-oriented programming 2. Comparison and differences with Java. Multiple inheritance.
- 8. Method overloading. Static methods, abstract classes, data class.
- 9. Decorators, memoization, modules, packages.

10. Code validation (debugging), testing (doctest, unittest), test-driven development.

11. Parallel computing, processes, process triggering and inter-process communication (shared variable, pipe, queue).

12. Graphical program design and implementation.

Recommended literature:

PILGRIM, Mark. Dive into Python 3. 2. United States of America: Apress, 2004. ISBN 978-1430224150. Dostupné také z: https://diveintopython3.net/

SHIPMAN, John W. Tkinter 8.5 reference: a GUI for Python. Socorro, NM 87801: New Mexico Tech Computer Center, 2013. Dostupné také z: https://anzeljg.github.io/rin2/book2/2405/docs/tkinter/tkinter.pdf

LOTT, Steven F. Mastering Object-oriented Python. Birmingham B3 2PB, UK: Packt Publishing, 2014. ISBN 978-1-78328-097-1.

Course language:

Slovak language, knowledge of English language is only required to read documentation of Python.

Notes:

Cou	urse	asses	sment		
			-		

Total number of	f assessed studen	its: 35	
	D	G	

A	В	C	D	E	FX
8.57	14.29	25.71	25.71	11.43	14.29

Provides: doc. RNDr. Ľubomír Šnajder, PhD., PaedDr. Ján Guniš, PhD.

Date of last modification: 30.08.2021

Approved:

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ ASU1/15	Course name: Algorithms and data structures
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 1 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 14 esent
Number of ECTS cr	edits: 4

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: (ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15),(ÚINF/PAZ1b/15 and leboÚINF/ePAZ1b/15)

Conditions for course completion:

Practice activities, homeworks and midterm exam.

Final examination consisting of practice and theoretical test.

Learning outcomes:

Understand and learn algorithmic paradigms and data structures. Analyse time complexity of these algorithms.

Brief outline of the course:

Algorithms' time and space asymptotic complexity. Main Theorem. Amortized complexity. Brute Force. Backtrack. Divide and Conquer. Dynamic programming. Comparison and noncomparison sort algorithms. Sweep line algorithms. Graph Theory Algorithms. Data structures – queue, stack, priority queue, heap, prefix sum, binary search trees, interval trees,

union & find, trie.

Recommended literature:

1, Laaksonen A.: Guide to Competitive Programming: Learning and Improving Algorithms Through Contests (Undergraduate Topics in Computer Science), Springer, 2017, ISBN 978-3319725468

2, Forišek M., Steinová M.: Explaining Algorithms Using Metaphors. Springer Briefs in Computer Science, Springer (2013), ISBN 978-1-4471-5018-3

3, R. Sedgewick, K. Wayne: Algorithms (4th Edition), Addison-Wesley Professional, 2011, ISBN 978-0321573513, http://algs4.cs.princeton.edu/home/

4, Open Data Structures: http://opendatastructures.org/

Course language:

Slovak or english

Notes:

Content prerequisities:

- programming skills in some programming language (Python/Java/C++/...)

- mathematics:

-- computing with polynomials, logarithmic and exponential functions

computing limits of sequences, L'Hospital rule					
Course assessm Total number o	nent f assessed studen	ts: 146			
А	В	С	D	Е	FX
13.01	5.48	17.12	24.66	36.99	2.74
Provides: prof.	Provides: prof. RNDr. Gabriel Semanišin, PhD., RNDr. Rastislav Krivoš-Belluš, PhD.				
Date of last modification: 25.02.2021					
Approved:					

University:	P. J.	Šafárik	University	in Košice
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Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Automata and formal languages
AFJ1a/15	

Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours):

Per week: 2 / 1 Per study period: 28 / 14

Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:

Oral examination.

Learning outcomes:

To provide theoretical background for studying computer science in general, by giving the necessary knowledge in theory of automata.

Brief outline of the course:

1: Chomsky hierarchy of grammars: alphabet, symbol (letter, character), transitive closure, word (string), empty word (empty string), length of a string, concatenation, language, grammar, nonterminal symbol, terminal symbol, initial nonterminal (initial symbol), grammar rule, derivation step, language generated by a grammar, Chomsky hierarchy of grammars - phrase-structure, context sensitive, context free, regular

2: Deterministic finite state automata: finite state automaton, state, input symbol, output symbol, initial state, transition function, output function, examples of automata and their graphic representation, generalized transition and output functions and their basic properties

3: Reduction of automata I: equivalent automata, minimal (optimal) automaton, reachable state, properties of reachable states, elimination of unreachable states

4: Reduction of automata II: equivalent states, k-equivalent states, properties of equivalence and kequivalence, relation between k-equivalence and (k+1)-equivalence, partitioning the state set into equivalence classes, elimination of equivalent states

5: Reduction of automata III: proof of correctness, unambiguity, and optimality of reduced automaton, testing equivalence of two automata

6: Deterministic finite state acceptors: basic definitions, language recognized by a finite state acceptor, common properties of acceptors and automata with an output, minimizing a finite state acceptor

7: Operations with regular languages: complement, intersection, union, difference, symmetric difference, testing of emptiness, inclusion, equality, and disjointness for regular languages

8: Nondeterministic finite state acceptors: definition, transition function, language recognized by a nondeterministic acceptor, elimination of nondeterminism

9: epsilon-acceptors: definition, properties, elimination of epsilon-transitions

10: Regular grammars: regular grammar, extended regular grammar, transformation of acceptor to a regular grammar, transformation of extended regular grammar to an epsilon-acceptor

11: Regular expressions I: basic properties, transformation of regular expression to an epsilonacceptor

12: Regular expressions II: regular equations, valid algebraic manipulations with regular expressions, solving an equation with a single unknown variable, solving a system of regular equations, transformation of acceptor to a regular expression

13: Another constructions: review of transformations among various representations, an example of a direct transformation of a grammar to a regular expression, closure of the class of regular languages under another language operations – concatenation and Kleene star, mirror image

14: Another operations: homomorphism and inverse homomorphism, a context-free language that is not regular

Recommended literature:

J.E. Hopcroft, R.Motwani, J.D. Ullman: Introduction to automata theory, languages, and computation, Addison-Wesley, 2001.

J. Shallit: A second course in formal languages and automata theory, Cambridge University press, 2009.

M. Sipser: Introduction to the theory of computation, Thomson Course Technology, 2006.

Course language:

Notes:

Course assessment

Total number of assessed students: 850

А	В	С	D	Е	FX
25.65	18.24	23.88	17.76	9.65	4.82

Provides: Mgr. Alexander Szabari, PhD., prof. RNDr. Viliam Geffert, DrSc., RNDr. Zuzana Bednárová, PhD.

Date of last modification: 17.08.2021

Approved:

University: P. J	. Šafárik Univers	ity in Košice				
Faculty: Facult	y of Science					
Course ID: ÚIN BPO/14	NF/ Course na	ame: Bachelor Tl	nesis and its Defe	ence		
Course type, sc Course type: Recommended Per week: Per Course metho	Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present					
Number of EC	IS credits: 4					
Recommended	semester/trimes	ster of the cours	e:			
Course level: 1.						
Prerequisities:						
Conditions for	course completi	on:				
Learning outco	omes:					
Brief outline of	the course:					
Recommended	literature:					
Course languag	ge:					
Notes:	Notes:					
Course assessm Total number of	nent f assessed studen	ts: 112				
А	В	С	D	Е	FX	
47.32	27.68	11.61	8.04	5.36	0.0	
Provides:						
Date of last mo	dification: 09.01	.2019				
Approved:	Approved:					

University: P. J.	Šafárik Universi	ity in Košice			
Faculty: Faculty	of Science				
Course ID: ÚIN KMU1/15	F/ Course na	me: Coding and	multimedial dat	a transition	
Course type, sco Course type: L Recommended Per week: 2 / 1 Course method	ppe and the met ecture / Practice course-load (he Per study period l: present	hod: ours): od: 28 / 14			
Number of ECT	S credits: 4				
Recommended :	semester/trimes	ter of the cours	e: 5.		
Course level: I.,	II.				
Prerequisities:					
Conditions for a	course completion	on:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	e:				
Notes:					
Course assessme Total number of	ent assessed student	ts: 19			
A	В	С	D	Е	FX
31.58	5.26	26.32	21.05	15.79	0.0
Provides: doc. R	NDr. Jozef Jirás	ek, PhD.		<u> </u>	
Date of last mod	lification: 07.07	.2021			
Approved:					

University: P. J. Šafa	arik University in Košice
Faculty: Faculty of S	Science
Course ID: CJP/ PFAJKKA/07	Course name: Communicative Competence in English
Course type, scope a Course type: Practa Recommended cour Per week: 2 Per sta Course method: co	and the method: ce irse-load (hours): idy period: 28 ombined, present
Number of ECTS cr	redits: 2
Recommended sem	ester/trimester of the course:
Course level: I., II.,	N
Prerequisities:	
Conditions for cour Active participation two classes at the me Online teaching (MS 2 credit tests (presur The tests will be tak classes. The presentation wil	se completion: in class and completed homework assignments. Students are allowed to miss ost. Teams), in case of an improved epidemiological situation = on-site teaching. nably in weeks 6/7 and 12/13) and a short oral presentation in English. ten online (MS Teams) during online teaching and in class in case of on-site l be sent to the course instructor as a video recording.

Final evaluation consists of the scores obtained for the 2 tests (70%) and the presentation (30%). Final grade will be calculated as follows: A 93-100 %, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64 % and less.

Learning outcomes:

Uplatnenie a aktívne používanie svojich teoretických vedomostí v praktických komunikačných situáciách. Zdokonalenie jazykových vedomostí a zručností študenta, rečovej, pragmatickej a vecnej kompetencie, predovšetkým zlepšujú komunikáciu, schopnosť prijímať a formulovať výpovede, efektívne vyjadrovať svoje myšlienky ako aj orientovať sa v obsahovom pláne výpovede. Precvičovanie rečových intencií kontaktných (napr. pozdravy, oslovenia, pozvanie, oslovenie), informatívnych (napr. získavanie a podávanie informácií, vyjadrenie priestorových a časových vzťahov), regulačných (napr. prosba, poďakovanie, zákaz, pochvala, súhlas, nesúhlas) a hodnotiacich (napr. vyjadrenie vlastného názoru, stanoviska, želania, emócií). Výsledkom budovania praktickej jazykovej kompetencie majú byť vedomosti a zručnosti zodpovedajúce požiadavkám a kritériám dokumentu Spoločný európsky referenčný rámec pre vyučovanie jazykov.

Brief outline of the course:

Rodina, jej formy a problémy Vyjadrovanie pocitov a dojmov Dom, bývanie a budúcnosť Formy a dialekty v anglickom jazyku Život v meste a na vidieku Kolokácie a idiomy, zaužívané slovné spojenia Prázdniny a sviatky vo svete

Životné prostredie a ekológia							
Výnimky zo slovosledu							
Frázové slovesá a	Frázové slovesá a ich použitie						
Charakteristiky ne	eformálneho di	škurzu					
Recommended lit www.bbclearninge McCarthy M., O'I Misztal M.: Them Fictumova J., Cec Principal, 2008. Peters S., Gráf T.: Jones L.: Commun Alexander L.G.: I	terature: english.com Dell F.: English natic Vocabular ccarelli J., Long Time to practi nicative Gramn Longman Engli	Vocabulary in U y. SPN, 1998. g T.: Angličtina, l se. Polyglot, 200 nar Practice. CU sh Grammar. Loi	lse, Upper-Intern konverzace pro p 7. P, 1985. ngman, 1988.	mediate. CUP, 19 pokročilé. Barrist	94. er and		
English language,	B2 level accor	ding to CEFR					
Notes:							
Course assessmen Total number of a	nt ssessed studen	ts: 260		_			
Α	В	С	D	E	FX		
40.38	40.38 22.31 18.85 8.85 6.54 3.08						
Provides: Mgr. Barbara Mitríková, Mgr. Zuzana Naďová							
Date of last modif	Date of last modification: 11.02.2021						
Approved:							

University: P. J	. Šafárik Univer	sity in Košice					
Faculty: Facult	y of Science						
Course ID: CJF PFAJGA/07	P/ Course n	Course name: Communicative Grammar in English					
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	ope and the me Practice d course-load (l er study period d: combined, pr	thod: nours): : 28 esent					
Number of EC	TS credits: 2						
Recommended	semester/trime	ster of the cours	e:				
Course level: 1.	, II., N						
Prerequisities:							
Conditions for Active classroo week), no retal 86-92%, C 79-8	course completed om participation ke. Final evalua 85%, D 72-78%,	ion: (max. 2x90 min. tion- average ass E 65-71%, FX 64	absences tolera essment of tests 4% and less.	nted). 2 test (5th/6 s. Grading scale:	6th and 12/13th A 93-100%, B		
Learning outco	mes:						
Brief outline of	the course:						
Recommended Vince M.: Macr McCarthy, O'D C. Oxengen, C. Misztal M.: The www.bbclearnin ted.com/talks	literature: millan Gramman ell: English Voc. Latham-Koenig ematic Vocabula ngenglish.com	in Context, Macr abulary in Use, Cl g: New English Fi ry, Fragment, 199	nillan, 2008 UP, 1994 le Advanced, Ox 8	xford 2010			
Course languag	ge:						
Notes:							
Course assessment Total number of assessed students: 406							
А	В	С	D	Е	FX		
39.66	18.97	16.75	8.62	5.91	10.1		
Provides: Mgr.	Lenka Klimčák	ová					
Date of last mo	dification: 14.0	9.2019					
Approved:							

University: P. J.	Šafárik Univers	sity in Košice					
Faculty: Faculty	of Science						
Course ID: KGE NJKG/07	ER/ Course na	R/ Course name: Communicative Grammar in German Language					
Course type, sco Course type: P Recommended Per week: 2 Pe Course method	ope and the me ractice course-load (h r study period: l: present	thod: ours): 28					
Number of ECT	S credits: 2						
Recommended s	semester/trimes	ster of the cours	e:				
Course level: I.,	II						
Prerequisities:							
Conditions for c	course completi	ion:					
Learning outcom	mes:						
Brief outline of	the course:						
Recommended I	literature:						
Course language	e:						
Notes:							
Course assessme Total number of	ent assessed studen	its: 54					
A	В	С	D	E	FX		
59.26	59.26 11.11 9.26 3.7 9.26 7.41						
Provides: Mgr. H	Blanka Jenčíkov	á		<u> </u>	<u>I</u>		
Date of last mod	lification: 03.05	5.2015					
Approved:							

University: P. J.	Šafárik University in Košice	
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Faculty: Faculty of Science

Course ID: ÚFV/	Course name: Computational Physics I
POF1a/99	

Course type, scope and the method:

Course type: Lecture / Practice

Recommended course-load (hours): Per week: 2 / 1 **Per study period:** 28 / 14

Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚFV/NUM/10

Conditions for course completion:

Continuous evaluation is based on students' presence and activity in the classroom and work on assignments. Examination and all assignments submitted electronically with the attached computer code.

Learning outcomes:

To teach students to use computer as a tool of modeling of physical reality. To present basic deterministic and stochastic approaches to solving mathematical models.

Brief outline of the course:

1. Introduction to dynamical systems.

2. Numerical solution of systems of ordinary differential equations with initial condition.

3. Euler's method, convergence, error estimation and order of the method. One-step methods, Tylortype and Runge-Kuta (RK2, RK4) methods.

4. Multistep methods, general linear method (explicit, implicit). Methods based on numerical quadrature.

5. Boundary value problems for ordinary differential equations.

6. Numerical solution of partial differential equations (PDE). Difference methods, their consistence, convergence and stability. Elliptic PDE.

7. Parabolic PDE, diffusion equation. Explicit and implicit methods.

8. Introduction to the Monte Carlo method. Monte Carlo integration and application in statistical physics.

9. Basics of probability theory. Monte Carlo estimate of mean and standard deviation. Central theorem of Monte Carlo sampling.

10. Simple and importance sampling. Markov chain. Perron-Frobenius theorem. Metropolis algorithm, detailed balance condition.

11. Monte Carlo simulations of lattice spin systems - application to Ising model.

12. Statistical analysis of Monte Carlo data.

Recommended literature:

Basic literature:

- C. Pozrikidis: Num. Comp. in Science and Engineering, Oxford Univ. Press, 2008.

- A.L. Garcia: Numerical Methods for Physics, Prentice-Hall, 1994.

- D. P. Landau, K. Binder: A Guide to Monte Carlo Simulations in Statistical Physics, Cambridge Univ. Press, 2021.

Other literature:

- B. A. Berg: Introduction to Markov Chain Monte Carlo Simulations and Their Statistical Analysis (http://www.worldscibooks.com/etextbook/5904/5904_intro.pdf)

- W. Janke: Monte Carlo Simulations of Spin Systems (http://www.physik.uni-leipzig.de/~janke/ Paper/spinmc.pdf)

Course language:

Notes:

Course assessment							
Total numb	er of assesse	d students: 1	19				
А	В	С	D	Е	FX	Ν	Р
31.93	17.65	12.61	16.81	13.45	2.52	0.0	5.04

Provides: prof. RNDr. Milan Žukovič, PhD.

Date of last modification: 30.06.2021

Approved:

University P I Šafá	rik University in Košice
Faculty: Faculty of S	cience
Faculty. Faculty of S	
Course ID: UFV/ POF1b/99	Course name: Computational Physics II
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 1 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 14 esent
Number of ECTS cr	edits: 4
Recommended seme	ster/trimester of the course: 5.
Course level: I., II.	
Prerequisities:	
Conditions for cours Continuous evaluation assignments. Examin code.	e completion: on is based on students' presence and activity in the classroom and work on ation and all assignments submitted electronically with the attached computer
Learning outcomes: To teach students to students with basic s dynamics.	create simulation projects to help to solve physical problems. To acquaint imulation methods of multiparticle systems by Monte Carlo and molecular
Brief outline of the c 1. Methods of Monte 2. Local and cluster p 3. Errors and histogra 4. Reweighting by sin 5. Universality and fi 6. Determination of c 7. Basics of quantum 8. MC simulations of 9. Diffusion equation 10. Stochastic process 11.Basics of molecular 12. Discretization sch	ourse: Carlo (MC) simulations of lattice spin systems. Deturbation algorithms. The analysis of MC data. Imple and histogram methods. Inite-size scaling. Order of phase transitions and calculation of critical exponents. MC simulations. Stochastic processes. Ses in financial analysis. ar dynamics method. The method is a system of molecular dynamics.
Recommended litera - D. P. Landau, K. Bi Univ. Press, 5-th edit - B. A. Berg: Introduc Analysis (http://www - W. Janke: Monte Ca Paper/spinmc.pdf)	nture: nder: A Guide to Monte Carlo Simulations in Statistical Physics, Cambridge ion, 2021. ction to Markov Chain Monte Carlo Simulations and Their Statistical v.worldscibooks.com/etextbook/5904/5904_intro.pdf) arlo Simulations of Spin Systems (http://www.physik.uni-leipzig.de/~janke/
Course language:	

Notes:						
Course assessment Total number of assessed students: 53						
А	В	B C D E FX				
52.83	16.98	16.98	9.43	1.89	1.89	
Provides: prof.	Provides: prof. RNDr. Milan Žukovič, PhD.					
Date of last modification: 30.06.2021						
Approved:						

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ UNV1/15	Course name: Computational and cognitive neuroscience I
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 28 esent
Number of ECTS cr	edits: 5
Recommended seme	ster/trimester of the course: 3., 5.
Course level: I.	
Prerequisities:	
Conditions for cours Midterm exam Final exam consisting	e completion: g of written and/or oral part
Learning outcomes: Overview anatomy, computational aspect	physiology, and cognitive processes in the human brain with focus on s of cognition and computational tools used in neuroscience.
 Brief outline of the c 1. Intro to neural and 2. Overview of anato 3. Methods of study ii 4. Neuron: anatomy, 5. Propagation of sign 6. Synaptic transmiss 7. Psychology of mer 8. Vision: Intro. Perc sitance. 9. Hearing and audito 10. Language, psycho 11. Attention. 12. Crossmodal intera 13. Reasoning and de 	ourse: cognitive science my and physiology of the central nervous system (CNS) n neuroscience. Sensory, motor and associative brain areas. types, action potential nals in the neuron, neural coding. ion and plasticity - neural basis of learning and memory. mory and learning. eeption of brightness, edges, color. Model BCS/FCS. Perception of size and ory cognition. blinguistics, speech perception and production. action (vision, hearing, touch). exision making.
Recommended litera 1. Poeppel D., Mangu 2020. ISBN-13: 978- 2. Dayan P and LF A Modeling of Neural S 3. Thagard P: Mind: 1 978-0262701099	nture: an G., Gazzaniga M. (ed.): The Cognitive Neurosciences. 6th ed. MIT Press. 0262043250 bbott: Theoretical Neuroscience - Computational and Mathematical Systems. MIT Press, 2005 ISBN-13: 978-0262541855 Introduction to Cognitive Science, 2nd Edition. Bradford Books. ISBN-13']:
Course language:	

Slovak or Engl	ish					
Notes: Content prereq Algebra, progra	uisites: amming (Matlab)).				
Course assessn Total number o	nent f assessed studen	ıts: 29				
А	В	С	D	Е	FX	
17.24	17.24 24.14 20.69 24.14 10.34 3.45					
Provides: doc.	Ing. Norbert Kop	čo, PhD., Ing. Pe	eter Lokša, PhD.			
Date of last modification: 08.07.2021						
Approved:						

University: P. J. Ša	afárik Univers	ity in Košice					
Faculty: Faculty o	f Science						
Course ID: ÚINF/ PTS/15	Course na	Course name: Computer and telecommunication networks					
Course type, scop Course type: Lec Recommended co Per week: 3 / 1 P Course method:	e and the met ture / Practice ourse-load (h er study perio present	thod: ; ours): od: 42 / 14					
Number of ECTS	credits: 5						
Recommended ser	mester/trimes	ster of the cours	e: 3.				
Course level: I.							
Prerequisities:							
Conditions for co	urse completi	on:					
Learning outcome	es:						
Brief outline of th	e course:						
Recommended lite	erature:						
Course language:							
Notes:							
Course assessmen Total number of as	t ssessed studen	ts: 6					
A	В	С	D	Е	FX		
16.67	16.67 0.0 0.0 33.33 33.33 16.67						
Provides: doc. RN	Dr. Jozef Jirás	sek, PhD.			<u></u>		
Date of last modif	ication: 03.05	5.2015					
Approved:							

University: P. J. Šafá	rik University in Košice					
Faculty: Faculty of S	cience					
Course ID: ÚINF/ ARP1/15	/ Course name: Computer architecture					
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 1 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 14 esent					
Number of ECTS cro	edits: 4					
Recommended seme	ster/trimester of the course: 4.					
Course level: I., II.						
Prerequisities:						
Conditions for cours Homeworks, active pa	e completion: articipation in laboratory exercises, final written exam. Final oral examination.					
Obtain detailed infor Understand the princi Gain basic experience Understand the curre acquainted with the co operation and possibi of computer equipme including setting ther	tration about the technical implementation of modern computer systems. ples of organization of work of processor and computer on concrete examples. with programming at the level of machine instructions (Assembler language). ent way a computer communicates with I / O devices. Students will get omponents of current computers, with their properties, connection, principle of lities of use. They will be able to make informed decisions about the purchase ent, identify computer failures; make simpler repairs by replacing modules, n correctly.					
Brief outline of the c Milestones in comput the implementation c organization, RAMs The microarchitectur architecture level, dat cache memory. I/O c processor virtualizati Laboratory practices	ourse: ter organization, fundamental limitations. The representation of numbers and of floating point arithmetic. Combinatorial and sequential circuits, memory and ROMs. Digital logic level architecture, data path timing, machine cycle. e level, microinstructions and microinstruction control. The instruction set a types, addressing modes, instruction types. Instruction execution, pipelining, controllers, ports, interrupts, direct memory access. Multicore architectures, on. Device drivers, operating system kernel, device-independent software. and tutorials.					
Recommended litera 1. W. Stallings: Comp 2. J. Ledin: Modern C 3. E. Upton, J. Dunte with Raspberry Pi, W	ture: puter Organization and Architecture, Pearson, 2018 Computer Architecture and Organization, Packt Publishing, 2020 mann, R. Roberts, T. Mamtora, B. Everard: Learning Computer Architecture Viley, 2016					
Course language: Slovak or English						
Notes:						

Content prerequisities: understanding of fundamental concepts of computer architecture and design within the scope of a standard undergraduate course. The course is not organized annually.

Course assessment Total number of assessed students: 58							
А	В	С	D	Е	FX		
17.24	18.97	17.24	20.69	18.97	6.9		
Provides: doc. RNDr. Jozef Jirásek, PhD.							
Date of last modification: 26.02.2021							
Approved:							

University: P. J. Safarik University in I	n Košice	ersity in	Univers	Šafárik	J.	P.	University:
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Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Computer network Internet
PSIN/15	

Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours):

Per week: 3 / 1 Per study period: 42 / 14

Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15 and leboÚINF/PRG1/15

Conditions for course completion:

Activity at excercises (max 18 points), home work (max 18 points), test (max 30 points). Verbal exam (min 25 points, max 50 points). Required minimum for passing the course is 55 points.

Learning outcomes:

To understand ISO OSI reference model for network communication, to analyze communication channels parameters, to understand different access methods, to be familiar with the function of center network devices (hub, switch, router), to understand IP protocol, IP addresses and the transfer of internet packets, to understand reliable data transfer of the TCP protocol, to be able to use Sockets in won application, to know basic application protocols.

Brief outline of the course:

1. Introduction to computer networks, internet connection types, delay and loss in packet-switched networks, ISO OSI reference model and TCP/IP protocols family.

2. Application layer: Web and HTTP, protocol FTP, e-mail and SMTP, POP3, IMAP,

3. Application layer: domain names and DNS, Peer-to-peer applications. Security in computer networks.

4. Transport layer: services, multiplexing and demultiplexing, protocol UDP, reliable data transfer

5. Transport layer: connection oriented transport protocol TCP, flow and congestion control.

6. Network Layer: Internet protocol IPv4, virtual circuit and datagram networks, packet fragmentation, routing table, application protocol DHCP

7. Network Layer: network address translation NAT, ICMP protocol, internet protocol IPv6

8. Network Layer: routing algorithms and protocols, broadcast and multicast routing

9. Link layer: error detection, multiple access methods CSMA/CD and CSMA/CA, Ethernet, frames, protocols ARP and RARP, link layer addressing

10. Link Layer and wireless and mobile networks: hub, switch, virtual LAN, 802.11 Wireless LAN, Bluetooth 802.15, WiMAX 802.16, Mobile IP, mobility in GSM

11. Physical Layer: Communication channels parameters, digital and analog encoding.

Recommended literature:

- 1. J. F. Kurose, Keith W. Ross: Computer Networking: A Top-Down Approach, 7. edition, 2016
- 2. A. S. Tanenbaum: Computer Networks, 5. edition, Pearson, 2010
- 3. W. Stallings: Local and Metropolitan Area Networks, Prentice Hall, 2000

4. E. Comer, R. 5. W. R. Steven	E. Droms: Comp s: TCP/IP Illustr	outer Networks a ated, Vol.1: The	nd Internets, Prei Protocols, Addis	ntice Hall, 2003 on-Wesley, 1994			
Course language:							
Notes:							
Course assessment Total number of assessed students: 791							
А	В	С	D	Е	FX		
9.73	5.18	12.64	16.43	36.16	19.85		
Provides: doc.	RNDr. Jozef Jirás	sek, PhD., RNDr	. Peter Gurský, P	hD.			
Date of last mo	dification: 09.07	7.2021					
Approved:							

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚINF/ KOPR/19	Course name: Concurrent programming				
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 1 / 2 Per study period: 14 / 28 Course method: present					
Number of ECTS cro	edits: 4				
Recommended seme	ster/trimester of the course: 5.				
Course level: I.					
Prerequisities: ÚINF	/PAZ1a/15 and leboÚINF/ePAZ1a/15				
Conditions for cours Final projects in area	e completion: of parallel and distributed programming				
Learning outcomes: Ability to create threa "Work stealing", inte SOAP, Akka, Apache	ad safe programs, cooperation and synchronization of threads, design pattern erruption of threads. Reactive programmig in Project Reactor.Technologies e Kafka and RabbitMQ.				
Brief outline of the c 1, Introduction to thre 2, Stale data and data 3, Composing thread 4, Concurrent collect 5, Thread coordination 6, Executors 7, ForkJoinPool - wo 8, Tasks cancellation 9, Threads in JavaFx 10, Reactive program 11, WebFlux - reactive 12, SOAP Web Servit 13, SOAP Web Servit 14, Actor model and 15, RabbitMQ 16, Apache Kafka Recommended literal	ourse: eads publication safe classes ions in rk stealing pattern umig - Project Reactor re REST server ces - From code to WSDL ces - From WSDL to code Akka				
 B. Goetz, Tim Peie Concurrency in Pract P. Hyde: Java Three T. White: Hadoop: 	erls, Joshua Bloch, Joseph Bowbeer, David Holmes, Doug Lea: Java ice; Addison-Wesley Professional, 2006 ad Programming; Sams, 1999 The Definitive Guide; Yahoo Press; Second Edition edition, 2010				

Course language:

Notes:							
Course assessment Total number of assessed students: 78							
А	В	С	D	Е	FX		
44.87	25.64	15.38	10.26	3.85	0.0		
Provides: RNDr. Peter Gurský, PhD., RNDr. Róbert Novotný, PhD.							
Date of last modification: 09.07.2021							
Approved:							
University: P. J. Šafa	árik University in Košice						
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Faculty: Faculty of S	Science						
Course ID: ÚINF/ KRP1/15	Course name: Cryptographic protocols						
Course type, scope a Course type: Lectu Recommended cou Per week: 2 / 2 Per Course method: pr	and the method: ire / Practice irse-load (hours): • study period: 28 / 28 resent						
Number of ECTS c	redits: 4						
Recommended sem	ester/trimester of the course: 3., 5.						
Course level: I., II.							
Prerequisities:							
Conditions for cour Homeworks, active j seminar. Final writte	se completion: participation in laboratory exercises, presentation of a selected topic at a course on exam.						
Learning outcomes: Understand the prob management. Know correctness. Control cryptographic techn electronic voting. On	plems of designing secure cryptographic protocols for authentication and key the ways to compromise them and be able to apply methods of proving their some automated verification tools. Understand and be able to apply advanced iques in various application fields - signature schemes, electronic banking, rientation in current problems of implementation of cryptographic protocols.						
Brief outline of the Authentication and	course: key establishment using shared and public key cryptography, key agreement						

protocols, conference key agreement, zero-knowledge protocols, provable security. Protocol architecture and formal definition, goals for authentication and key establishment, formal verification. Digital signature, implementation, trust distribution.

The final seminar with presentations on selected current topics - electronic banking, electronic voting, secure communication ...

Recommended literature:

1. Colin Boyd, Anish Mathuria: Protocols for Authentication and Key Establishment, Springer, 2020

2. Douglas R. Stinson, Maura B. Paterson: Cryptography: Theory and Practice, Fourth Edition, Chapman & Hall/CRC, 2018

Paul C. van Oorschot: Computer Security and the Internet: Tools and Jewels, Springer, 2020
 Peter Ryan, Steve Schneider: Modeling and Analysis of Security Protocols, Addison-Wesley, 2001

Course language:

Slovak or English

Notes:

Content prerequisities: understanding of fundamental cryptographic concepts and primitives (as taught in the course KRS/15 or in the scope of the textbook "Understanding Cryptography" by Christof Paar and Jan Pelzl).

The course is not organized annually.

Course assessment Total number of assessed students: 21							
А	A B C D E FX						
38.1	4.76	19.05	19.05	14.29	4.76		
Provides: doc.]	RNDr. Jozef Jirás	sek, PhD., RNDr	. Rastislav Krivo	š-Belluš, PhD.			
Date of last modification: 07.07.2021							
Approved:							

University: P. J. Šafărik University in Košiec Faculty: Faculty of Science Course ID: ÚINF/ Course name: Cryptographic systems and their applications KRS/15 Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 3 / 2 Per study period: 42 / 28 Course method: present Number of ECTS credits: 6 Recommended semester/trimester of the course: 3., 5. Course level: 1, II. Prerequisities: Conditions for course completion: Homeworks, midterm written exam, active participation in laboratory exercises. Final written exam, possibly oral exam. Learning outcomes: This course covers the basic knowledge in understanding and using cryptography. The main focus is on definitions, theoretical foundations, and rigorous proofs of security, with some programming practice. Topics include symmetric and public key encryption, message integrity, hash functions, block cipher design and analysis, number theory, and digital signatures. The course is orivoides an introduction to cryptographic protocols for authentication and key management, including PKI and certificates. Bried utile of the course: (Classical cryptography, basic information theory, cryptoanalysis, security of classical ciphers. Symmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - sRA, Elgamal, elliptic curve cryptography, Springer 2010. 2. STINSON, D. R. PATERSON, M. B.: Cryptography, Springer 2010. 2. STINSON, D. R. PATERSON, M. B.: Cryptography, Springer 2010. 3. MAO, W. Modern Cryptography: Theory and Practice. Prentice Hall, 2003. 4. MENEZES, A., OORSCHOT, P. van, VANSTONE, S.: Handbook of Applied Cryptography. CRC Press, 1996. 5. SCHNEIER, B.: Applied Cryptography, 20th Edition, John Wiley & Sons Inc., 2015 Course language: Slovak or English Notes: Content prerequisities: basic number theory and algebra, basic programming	-								
Faculty: Faculty of Science Course ID: ÚTNF/ KRS/15 Course name: Cryptographic systems and their applications KRS/15 Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 3 / 2 Per study period: 42 / 28 Course method: present Number of ECTS credits: 6 Recommended semester/trimester of the course: 3., 5. Course level: 1, II. Prerequisities: Conditions for course completion: Homeworks, midterm written exam, active participation in laboratory exercises. Final written exam, possibly oral exam. Learning outcomes: This course covers the basic knowledge in understanding and using cryptography. The main focus is on definitions, theoretical foundations, and rigorous proofs of security, with some programming practice. Topics include symmetric and public key encryption, message integrity, hash functions, look cipher design and analysis, number theory, and digital signatures. The course also provides an introduction to cryptographic protocols for authentication and key management, including PKI and certificates. Brief outline of the course: Classical cryptography, basic information theory, cryptoanalysis, security of classical ciphers. Symmetric ciphers - steam ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - RSA, Elgamal, elliptic curve cryptography, Springer 2010. 2. STINSON, D. R. PATERSON, M. B.: Cryptography, Springer 2010. 2. STINSON, D. R. PATERSON, M. B.: Cryptography. Springer 2010. 3. MAO, W. Modern C	University: P. J. Šafárik University in Košice								
Course ID: ÚINF/ Course name: Cryptographic systems and their applications KRS/15 Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 3 / 2 Per study period: 42 / 28 Course method: present Number of ECTS credits: 6 Recommended semester/trimester of the course: 3., 5. Course level: I., II. Prerequisities: Conditions for course completion: Homeworks, midtern written exam, active participation in laboratory exercises. Final written exam, possibly oral exam. Learning outcomes: This course covers the basic knowledge in understanding and using cryptography. The main focus is on definitions, theoretical foundations, and rigorous proofs of security, with some programming practice. Topics include symmetric and public key encryption, message integrity, hash functions, block cipher design and analysis, number theory, and digital signatures. The course also provides an introduction to cryptographic protocols for authentication and key management, including PKI and certificates. Brief outline of the course: Quastic Liphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - Stream ciphers, block ciphers of Partice. Press, 2018. 3. MAO, W. Modern Cryptography. Theory and Practice. CRC Press, 2018. S. MAO, W. Modern Cryptography, Springer 2010.	Faculty: Faculty of S	Faculty: Faculty of Science							
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 3 / 2 Per study period: 42 / 28 Course method: present Number of ECTS credits: 6 Recommended semester/trimester of the course: 3., 5. Course level: 1., II. Prerequisities: Conditions for course completion: Homeworks, midtern written exam, active participation in laboratory exercises. Final written exam, possibly oral exam. Learning outcomes: This course covers the basic knowledge in understanding and using cryptography. The main focus is on definitions, theoretical foundations, and rigorous proofs of security, with some programming practice. Topics include symmetric and public key encryption, message integrity, hash functions, block cipher design and analysis, number theory, and digital signatures. The course also provides an introduction to cryptographic protocols for authentication and key management, including PKI and certificates. Brief outline of the course: Classical cryptography, basic information theory, cryptoanalysis, security of classical ciphers. Symmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - RSA, Elgamal, elliptic curve cryptography: Theory and Practice. CRC Press, 2018. 3. MAO, W. Modern Cryptography: Theory and Practice. CRC Press, 2018. 3. MAO, W. Modern Cryptography: Theory and Practice. Prentice Hall, 2003. 4. MENEZES, A., OORSCHOT, P. van, VANSTONE, S.: Handbook of Applied Cryptography. CRC Press, 1996. 5. SCHNEIER, B.: Applied Cryptography, 20th Edition, John Wiley & Sons Inc., 2015 Course language: Slovak or English Notes: Content prerequisities: basic number theory and algebra, basic programming	Course ID: ÚINF/ KRS/15	Course name: Cryptographic systems and their applications							
Number of ECTS credits: 6 Recommended semester/trimester of the course: 3., 5. Course level: I., II. Prerequisities: Conditions for course completion: Homeworks, midterm written exam, active participation in laboratory exercises. Final written exam, possibly oral exam. Learning outcomes: This course covers the basic knowledge in understanding and using cryptography. The main focus is on definitions, theoretical foundations, and rigorous proofs of security, with some programming practice. Topics include symmetric and public key encryption, message integrity, hash functions, block cipher design and analysis, number theory, and digital signatures. The course also provides an introduction to cryptographic protocols for authentication and key management, including PKI and certificates. Brief outline of the course: Classical cryptography, basic information theory, cryptoanalysis, security of classical ciphers. Symmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block ciphers questions, message authentication codes, digital signatures. Authentication, key establishment and distribution, certificates. Recommended literature: 1. PAAR, Ch., PELZL, J.: Understanding Cryptography, Springer 2010. 2. STINSON, D. R.: PATERSON, M. B.: Cryptography, Springer 2010. 2. STINSON, D. R.: PATERSON, M. B.: Cryptography. Theory and Practic. CRC Pr	Course type, scope a Course type: Lectur Recommended cour Per week: 3 / 2 Per Course method: pre	and the method: re / Practice rse-load (hours): study period: 42 / 28 esent							
Recommended semester/trimester of the course: 3., 5. Course level: I., II. Prerequisities: Conditions for course completion: Homeworks, midterm written exam, active participation in laboratory exercises. Final written exam, possibly oral exam. Learning outcomes: This course covers the basic knowledge in understanding and using cryptography. The main focus is on definitions, theoretical foundations, and rigorous proofs of security, with some programming practice. Topics include symmetric and public key encryption, message integrity, hash functions, block cipher design and analysis, number theory, and digital signatures. The course also provides an introduction to cryptographic protocols for authentication and key management, including PKI and certificates. Brief outline of the course: Classical cryptography, basic information theory, cryptoanalysis, security of classical ciphers. Symmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block cipher graphy. Springer 2010. 2. STINSON, D. R.: PATERSON, M. B.: Cryptography, Springer 2010. 2. STINSON, D. R.: PATERSON, M. B.: Cryptography. Theory and Practic. CRC Press, 2018. 3. MAO, W. Modern Cryptography: Theory and Practice. Prentice Hall, 2003. 4. MENEZES, A., OORSCHOT, P. van, VANSTONE, S.: Han	Number of ECTS cr	edits: 6							
Course level: I., II. Prerequisities: Conditions for course completion: Homeworks, midterm written exam, active participation in laboratory exercises. Final written exam, possibly oral exam. Learning outcomes: This course covers the basic knowledge in understanding and using cryptography. The main focus is on definitions, theoretical foundations, and rigorous proofs of security, with some programming practice. Topics include symmetric and public key encryption, message integrity, hash functions, block cipher design and analysis, number theory, and digital signatures. The course also provides an introduction to cryptographic protocols for authentication and key management, including PKI and certificates. Brief outline of the course: Classical cryptography, basic information theory, cryptoanalysis, security of classical ciphers. Symmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - RSA, Elgamal, elliptic curve cryptosystems. Hash functions, message authentication codes, digital signatures. Authentication, key establishment and distribution, certificates. Recommended literature: 1 1. PAAR, Ch., PELZL, J.: Understanding Cryptography, Springer 2010. 2. STINSON, D. R.: PATERSON, M. B.: Cryptography: Theory and Practice. CRC Press, 2018. 3. MAO, W. Modern Cryptography: Theory and Practice. Prentice Hall, 2003. 4. MENEZES, A., OO	Recommended seme	ster/trimester of the course: 3., 5.							
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Course language: Slovak or English Notes: Content prerequisities: basic number theory and algebra, basic programming	Recommended litera 1. PAAR, Ch., PELZ 2. STINSON, D. R. 3. MAO, W. Modern 4. MENEZES, A., OC CRC Press, 1996. 5. SCHNEIER, B.: A	hture: L, J.: Understanding Cryptography, Springer 2010. PATERSON, M. B.: Cryptography: Theory and Practie. CRC Press, 2018. Cryptography: Theory and Practice. Prentice Hall, 2003. ORSCHOT, P. van, VANSTONE, S.: Handbook of Applied Cryptography. .pplied Cryptography, 20th Edition, John Wiley & Sons Inc., 2015							
Notes: Content prerequisities: basic number theory and algebra, basic programming	Course language: Slovak or English								
	Notes: Content prerequisitie	s: basic number theory and algebra, basic programming							

Course assessment Total number of assessed students: 112							
А	A B C D E FX						
12.5	9.82	13.39	13.39	33.04	17.86		
Provides: RND	Provides: RNDr. Rastislav Krivoš-Belluš, PhD.						
Date of last modification: 07.07.2021							
Approved:							

University: P. J. Šafá	rik University in Košice						
Faculty: Faculty of Science							
Course ID: ÚINF/ DBS1a/15	Course name: Database systems						
Course type, scope a Course type: Lectur Recommended cou Per week: 2 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 28 esent						
Number of ECTS cr	edits: 5						
Recommended seme	ster/trimester of the course: 3.						
Course level: I., II.							
Prerequisities:							
Conditions for cours Written works during Written and oral exam	se completion: g the semester, project. n.						
Learning outcomes: Acquired basic conce Know the principles formal foundations of and design DB, and t	epts and techniques of relational database theory and corresponding software. of relational databases and learn the basics of query language. Understand the f database systems - three-valued logic, relational algebra. Be able to model he role of data warehouses.						
 Brief outline of the of the of 1) Relational database 2) Data types, operate 3) JOIN operations. 4) AGGREGATION 5) Data and database 6) DB design, ER dia 7) System commandes 8) Nested queries. Ro 9) Three-valued logic 10) Data science and 11) Data warehouses 12) Normalization of 	ourse: es. Query language SQL, filtering. ors, numerical, string and time functions. AND GROUP BY. models. Relational scheme. RDB principles. Data integrity. agrams. s about DB and tables. Cascading deletion and update. DLLUP. CASE expression. c. Quantifiers and NOT. Set operations. knowledge acquisition using R. . Data cube. Pivot table. relational databases - 1. Relational algebra.						
Recommended litera C.J. Date, Database I 978-1-449-32801-6 J. Murach, Murach's 1943872368 - R. Ramakrishnan, J 9780071231510 - S. Krajčí: Databázo	nture: Design and Relational Theory, 2012, O'Reilly Media, Inc., ISBN: MySQL, 3rd Edition, 2019, Mike Murach & Associates, Inc., ISBN-10: . Gehrke, Database Management Systems, 2020, McGraw-Hill, ISBN13 vé systémy, UPJŠ, 2005						

Course languag	ge:				
Notes:					
Course assessm Total number of	nent f assessed studen	ts: 858			
А	В	С	D	Е	FX
10.61	9.21	17.95	22.84	32.52	6.88
Provides: doc. 1	RNDr. Csaba Tör	ök, CSc., Mgr. I	Dávid Varga		
Date of last modification: 02.07.2021					
Approved:					

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ DBS1b/15	Course name: Database systems
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 28 esent
Number of ECTS cr	edits: 6
Recommended seme	ster/trimester of the course: 4.
Course level: I.	
Prerequisities: ÚINF	/DBS1a/15 and leboÚINF/DBdi/15
Conditions for cours Written works during Written and oral exar	e completion: , the semester, project. n.
Learning outcomes: Acquired advanced normalization, ETNF	techniques of relational databases. Theoretical foundations of DB Principles of NoSQL databases, MongoDB.
Brief outline of the c 1) Introduction to SQ 2) Stored procedures. 3) Views. CTE, recur 4) Transactions. Curs 5) Triggers and integr 6) XML documents a 7) Functional depend 8) The latest normal f 9) Big data and NoSC 10) MongoDB, CRU 11) Aggregations and 12) Replication and s	ourse: L Server. Set operations. Window functions. System and user functions. sion and transitive closure. ors. Pivoting. rity. Physical organization of data, B-trees and indexes. and their querying. JSON. encies and NF. form - ETNF. QL. D and cursors. i indices. harding.
Recommended litera - Date C.J., Database - I. Ben-Gan, D. Sark 978-0-7356-8504-8 - I. Ben-Gan, T-SQL 978-1-5093-0200-0 - L. Davidson, Pro SO ISBN-13: 978-1-4842 - K. Chodorow, Mong	ture: Design and Relational Theory, O'Reilly, 2012 a, A. Machanic, K. Farlee, T-SQL Querying, 2015, Microsoft Press, ISBN: Fundamentals, Third Edition, 2016, Microsoft Press, ISBN: QL Server Relational Database Design and Implementation, 2021, Apress, 2-6496-6 goDB: The Definitive Guide, O'Reilly, second edition, 2013
Course language:	

Notes: If necessary, teaching, mid-term and final evaluation will be by distance form.								
Course assessment Total number of assessed students: 732								
А	В	B C D E FX						
9.7	8.2	12.3	24.45	34.97	10.38			
Provides: doc.	Provides: doc. RNDr. Csaba Török, CSc., Mgr. Dávid Varga							
Date of last modification: 02.07.2021								
Approved:								

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	of Science						
Course ID: ÚINI VMA1/15	F/ Course name: Development of mobile applications						
Course type, sco Course type: Pr Recommended Per week: 3 Per Course method	pe and the met ractice course-load (h r study period: : present	thod: ours): 42					
Number of ECT	S credits: 3						
Recommended s	emester/trimes	ster of the cours	e: 6.				
Course level: I., I	II						
Prerequisities:							
Conditions for c	ourse completi	on:					
Learning outcon	nes:						
Brief outline of t	he course:						
Recommended li	iterature:						
Course language	2:						
Notes:	,						
Course assessme Total number of	nt assessed studen	ts: 80					
A	В	С	D	Е	FX		
53.75 3.75 15.0 5.0 3.75 18.75							
Provides: RNDr.	Róbert Novotn	ý, PhD., RNDr. M	Miroslav Opiela,	PhD.			
Date of last mod	ification: 02.07	7.2015					
Approved:							

Faculty: Faculty of Science Course ID: ÚMV/ DSM3a/10 Course name: Discrete mathematics for informaticians Course type, scope and the method: Course method: present Number of ECTS credits: 4 Recommended semester/trimester of the course: 3. Course level: 1. Prerequisities: Conditions for course completion: Based on results of two semestral tests. Based on semestral evaluation and the result of examination. Learning outcomes: To present the basics of combinatorics and their applications in computer science. Brief outline of the course: Mathematical induction and Dirichlet principle. The sum and the product rule. Permutations, k-permutations, combinations. Selections with repetitions. The inclusion/exclusion principle. Recurrent equations. Introduction to graph theory. Trees. Eulerian and Hamiltonian graphs. Planar graphs. Graph colourings. Recommended literature: 1. S. lendrofl, P. Mihok: Diskrétna matematika I., UPIŠ Košice 1992 2. J. Nešetřil, J. Matoušek: Kapitoly z diskrétní matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000. 4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994. Course assessment Total number of assessed students: 274 A B C D	University: P. J. Šafárik University in Košice									
Course ID: ÚMV/ DSM3a/10 Course type; scope and the method: Course type; scope and the method: Course type; Lecture / Practice Recommended course-load (hours): Per weck: 2 / 1 Per study period: 28 / 14 Course iter / Practice Recommended semester/trimester of the course: 3. Course level: 1. Prerequisities: Conditions for course completion: Based on results of two semestral tests. Based on semestral evaluation and the result of examination. Learning outcomes: To present the basics of combinatorics and their applications in computer science. Brief outline of the course: Mathematical induction and Dirichlet principle. The sum and the product rule. Permutations, k-permutations, combinations. Sclections with repetitions. The inclusion/exclusion principle. Recurrent equations. Introduction to graph theory. Trees. Eulerian and Hamiltonian graphs. Planar graphs. Graph colourings. Recommended literature: 1. S. lendrol, P. Mihok: Diskrétna matematika I., UPIŠ Košice 1992 2. J. Nešetril, J. Matoušek: Kapitoly z diskrétni matematiky 3. F. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000. 4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994. Course assessment Total number of assessed students: 274 A B C D E FX 5.47 2.92 9.49 16.79 52.92 12.41	Faculty: Faculty	Faculty: Faculty of Science								
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present Image: Study period: 28 / 14 Number of ECTS credits: 4 Image: Study period: 28 / 14 Recommended semester/trimester of the course: 3. Image: Study period: 28 / 14 Course level: 1. Prerequisities: Prerequisities: Image: Study period: 28 / 14 Conditions for course completion: Based on results of two semestral tests. Based on semestral evaluation and the result of examination. Image: Study period: 28 / 14 Learning outcomes: To present the basics of combinatorics and their applications in computer science. Brief outline of the course: Image: Study period: 28 / 14 Mathematical induction and Dirichlet principle. The sum and the product rule. Permutations, experimutations, combinations. Selections with repetitions. The inclusion/exclusion principle. Recommended literature: Image: Study 2 diskrétni matematiky 1. S. Jendrof, P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992 Image: Study 2 diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Con.Rending 1994. Study 2 diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. CoRendin	Course ID: ÚM DSM3a/10	MV/ Course name: Discrete mathematics for informaticians								
Number of ECTS credits: 4 Recommended semester/trimester of the course: 3. Course level: 1. Prerequisities: Conditions for course completion: Based on results of two semestral tests. Brief outline of the course: Mathematical induction and Dirichlet principle. The sum and the product rule. Permutations, k-permutations, combinations. Selections with repetitions. The inclusion/exclusion principle. Recommended literature: 1. S. Jendroff, P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992 2. J. Nešetiil, J. Matousek: Kapitoly z diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. CoRending 1994. Course assessment Kotes:	Course type, sco Course type: L Recommended Per week: 2 / 1 Course method	Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present								
Recommended semester/trimester of the course: 3. Course level: I. Prerequisities: Conditions for course completion: Based on results of two semestral tests. Based on results of two semestral tests. Based on results of two semestral tests. Based on semestral evaluation and the result of examination. Learning outcomes: To present the basics of combinatorics and their applications in computer science. Brief outline of the course: Mathematical induction and Dirichlet principle. The sum and the product rule. Permutations, k-permutations, combinations. Selections with repetitions. The inclusion/exclusion principle. Recommended literature: 1. S. Jendrof, P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992 2. J. Nešetřil, J. Matoušek: Kapitoly z diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000. 4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994. Course language: Slovak Notes: Course assessment Total number of assessed students: 274 A B C D	Number of ECT	S credits: 4								
Course level: I. Prerequisities: Conditions for course completion: Based on results of two semestral tests. Based on semestral evaluation and the result of examination. Learning outcomes: To present the basics of combinatorics and their applications in computer science. Brief outline of the course: Mathematical induction and Dirichlet principle. The sum and the product rule. Permutations, k-permutations, combinations. Selections with repetitions. The inclusion/exclusion principle. Recommended literature: 1. S. Jendrof, P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992 2. J. Nešetřil, J. Matoušek: Kapitoly z diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000. 4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994. Course language: Slovak Slovak Notes: Course assessment Total number of assessed students: 274 A B D E FX Slovak	Recommended s	semester/trimes	ster of the cours	e: 3.	_					
Prerequisities: Conditions for course completion: Based on results of two semestral tests. Based on semestral evaluation and the result of examination. Learning outcomes: To present the basics of combinatorics and their applications in computer science. Brief outline of the course: Mathematical induction and Dirichlet principle. The sum and the product rule. Permutations, combinations. Selections with repetitions. The inclusion/exclusion principle. Recurrent equations. Introduction to graph theory. Trees. Eulerian and Hamiltonian graphs. Planar graphs. Graph colourings. Recommended literature: 1. S. Jendrol, P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992 2. J. Nešetřil, J. Matoušek: Kapitoly z diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000. 4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994. Course language: Slovak Notes: Course assessment Total number of assessed students: 274 A B C D E FX 5.47 2.92 9.49 16.79 52.92 12.41 Provides: RNDr. Mária Maceková, PhD. D E	Course level: I.									
Conditions for course completion: Based on results of two semestral tests. Based on semestral evaluation and the result of examination. Learning outcomes: To present the basics of combinatorics and their applications in computer science. Brief outline of the course: Mathematical induction and Dirichlet principle. The sum and the product rule. Permutations, k-permutations, combinations. Selections with repetitions. The inclusion/exclusion principle. Recurrent equations. Introduction to graph theory. Trees. Eulerian and Hamiltonian graphs. Planar graphs. Graph colourings. Recommended literature: 1. S. Jendrol, P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992 2. J. Nešetřil, J. Matoušek: Kapitoly z diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000. 4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994. Course language: Slovak Notes: Course assessment Total number of assessed students: 274 A B C D E FX 5.47 2.92 9.49 16.79 52.92 12.41 Provides: RNDr. Mária Maceková, PhD. D E FX <	Prerequisities:									
Learning outcomes: To present the basics of combinatorics and their applications in computer science. Brief outline of the course: Mathematical induction and Dirichlet principle. The sum and the product rule. Permutations, k-permutations, combinations. Selections with repetitions. The inclusion/exclusion principle. Recurrent equations. Introduction to graph theory. Trees. Eulerian and Hamiltonian graphs. Planar graphs. Graph colourings. Recommended literature: 1. S. Jendrol, P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992 2. J. Nešetřil, J. Matoušek: Kapitoly z diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000. 4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994. Course language: Slovak Notes: Course assessment Total number of assessed students: 274 A B C D E FX 5.47 2.92 9.49 16.79 52.92 12.41 Provides: RNDr. Mária Maceková, PhD. Date of last modification: 22.09 2019	Conditions for c Based on results Based on semest	course completi of two semestra tral evaluation a	on: al tests. nd the result of e	xamination.						
Brief outline of the course: Mathematical induction and Dirichlet principle. The sum and the product rule. Permutations, k-permutations, combinations. Selections with repetitions. The inclusion/exclusion principle. Recurrent equations. Introduction to graph theory. Trees. Eulerian and Hamiltonian graphs. Planar graphs. Graph colourings. Recommended literature: 1. S. Jendrol', P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992 2. J. Nešetřil, J. Matoušek: Kapitoly z diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000. 4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994. Course language: Slovak Notes: Course assessment Total number of assessed students: 274 A B C D E FX 5.47 2.92 9.49 16.79 52.92 12.41 Provides: RNDr. Mária Maceková, PhD. Date of last modification: 22 09 2019	Learning outcom To present the ba	mes: asics of combina	atorics and their a	applications in co	omputer science.					
Recommended literature: 1. S. Jendrol', P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992 2. J. Nešetřil, J. Matoušek: Kapitoly z diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000. 4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994. Course language: Slovak Notes: Course assessment Total number of assessed students: 274 A B C D E FX 5.47 2.92 9.49 16.79 52.92 12.41 Provides: RNDr. Mária Maceková, PhD. Date of last modification: 22.09 2019	Brief outline of Mathematical in k-permutations, Recurrent equati graphs. Graph co	the course: induction and D combinations. ions. Introductic olourings.	irichlet principle Selections with on to graph theory	. The sum and repetitions. The 7. Trees. Eulerian	the product rule e inclusion/exclu and Hamiltonia	e. Permutations, usion principle. n graphs. Planar				
Course language: Slovak Notes: Course assessment Total number of assessed students: 274 A B C D E FX 5.47 2.92 9.49 16.79 52.92 12.41 Provides: RNDr. Mária Maceková, PhD. Date of last modification: 22.09 2019	Recommended I 1. S. Jendrol', P. 2. J. Nešetřil, J. 3. E. R. Scheiner Grove 2000. 4. R.P. Grimaldi 1994.	 Recommended literature: 1. S. Jendrol', P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992 2. J. Nešetřil, J. Matoušek: Kapitoly z diskrétni matematiky 3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000. 4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994 								
Notes: Course assessment Total number of assessed students: 274 A B C D E FX 5.47 2.92 9.49 16.79 52.92 12.41 Provides: RNDr. Mária Maceková, PhD. Date of last modification: 22.09 2019	Course language: Slovak									
Course assessment Total number of assessed students: 274 A B C D E FX 5.47 2.92 9.49 16.79 52.92 12.41 Provides: RNDr. Mária Maceková, PhD. Date of last modification: 22.09.2019 Date of last modification: 22.09.2019 Date of last modification: 22.09.2019	Notes:									
A B C D E FX 5.47 2.92 9.49 16.79 52.92 12.41 Provides: RNDr. Mária Maceková, PhD. Date of last modification: 22.09.2019 Date of last modification: 22.0	Course assessment Total number of assessed students: 274									
5.47 2.92 9.49 16.79 52.92 12.41 Provides: RNDr. Mária Maceková, PhD. Date of last modification: 22 09 2019	A B C D E FX									
Provides: RNDr. Mária Maceková, PhD. Date of last modification: 22 09 2019	5.47 2.92 9.49 16.79 52.92 12.41									
Date of last modification: 22 09 2019	Provides: RNDr	. Mária Maceko	vá, PhD.							
	Date of last mod	lification: 22.09	9.2019							

Approved:

University: P. J. Šafá	rik University in Košice						
Faculty: Faculty of S	Faculty: Faculty of Science						
Course ID: CJP/ PFAJ4/07	Course name: English Language of Natural Science						
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent						
Number of ECTS cr	edits: 2						
Recommended seme	ster/trimester of the course: 4.						
Course level: I.							
Prerequisities:							
Conditions for cours Distant form of study Active participation i classes at the most (in Continuous assessme 13) and academic pre In order to be admitt credit tests. The exam test results represent the other 50 The final grade for th A 93-100, B 86-92, C	See completion: (Online through MS teams) - based on the sylabus n class and completed homework assignments. Students are allowed to miss 2 n case of online form - not attending online class/ assignments not handed in) ent: 2 credit tests taken thorugh MS Teams online(presumably in weeks 6 and esentation in English given through MS Teams online. ted to the final exam, a student has to score at least 65 % as a sum of both represent 50% of the final grade for the course, continuous assessment results 0% of the final grade. te course will be calculated as follows: C 79-85, D 72-78, E 65-71, FX 64 and less.						
Learning outcomes: Enhancement of studi in English for specific with selected phonolo competence (familian skills at B2 level (CE	ents' language skills (speaking, writing, reading and listening comprehension) c purposes and development of students' language competence (familiarization ogical, lexical and syntactic phenomena), improvement of students' pragmatic rization with selected language functions) and improvement of presentation CFR) with focus on terminology of English for natural science.						
 Brief outline of the c 1. Introduction to stude 2. Selected aspects of 3. Talking about acade 4. Discussing science 5. Defining scientific 6. Expressing cause a 7. Describing structure 8. Explaining processe 9. Comparing objects 10. Talking about processe 11. Referencing author 	dying language f scientific language lemic study terminology and concepts and effect res ses s, structures and concepts oblem and solution ors						

12. Giving examples								
13. Visual aids and numbers								
14. Referencing th	14. Referencing time and place							
Presentation topic	es related to stu	dents study field	S.					
Recommended life study materials pr Redman, S.: Engl Press, 2003. Armer, T.: Cambr Wharton J.: Acad Murphy, R.: Engl P. Fitzgerald : Engl https://worldservi www.isllibrary.co	terature: rovided by the ish Vocabulary ridge English fo emic Encounte ish Grammar in glish for ICT st ce/learningeng	course instructor in Use, Pre-inter or Scientists. CUI ors. The Natural V n Use. Cambridge rudies. Garnet Pu lish, https://spect	rmetdiate, Intern P, 2011. Vorld. CUP, 200 e University Pre blishing, 2011. ator.sme.sk	nediate. Cambrid 9. ss, 1994.	ge University			
Course languages	•							
Notes:								
Course assessmen Total number of a	nt issessed studen	ts: 2744						
А	В	С	D	E	FX			
38.16 25.4 16.65 9.73 7.87 2.19								
Provides: Mgr. Le	enka Klimčáko	vá, Mgr. Viktória	Mária Slovensl	ká, Mgr. Zuzana 1	Naďová			
Date of last modi	fication: 14.02	2.2021						
Approved:								

Oniversity 1. 5. Saturik University in Rosie							
Faculty: Faculty of Science							
Course ID: ÚINF/ ABSP/16Course name: Essentials of ABAP							
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present							
Number of ECTS credits: 3							
Recommended semester/trimester of the course: 5.							
Course level: I., N							
Prerequisities: ÚINF/ZTSP/16							
Conditions for course completion:							
Learning outcomes:							
 Principles of programming in ABAP, declaration of variables, the basic syntax of the language ABAP Open SQL, ABAP Workbench navigation, ABAP editor. Arithmetic, logic conditions, string operations, cycles, test programs using a debugger. An overview of the most important commands of ABAP, definition elementary and structured data objects, functional groups and function modules. Individual work for practice. 							
Recommended literature:							
Course language:							
Notes:							
Course assessment Total number of assessed students: 55							
A B C D E FX							
30.91 43.64 20.0 1.82 0.0 3.64							
Provides:							
Date of last modification: 31.08.2021							
Approved:							

		UKSE INFORMATION LET I						
University: P. J. Šafá	rik Univers	ity in Košice						
Faculty: Faculty of S	Faculty: Faculty of Science							
Course ID: ÚINF/ ZSSP/16	Course na	e name: Essentials of the SAP System for Users						
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 1 Per Course method: pre	nd the met re / Practice rse-load (h study peri esent	thod: c ours): od: 28 / 14						
Number of ECTS cr	edits: 3							
Recommended seme	ster/trimes	ster of the course: 5.						
Course level: I., N								
Prerequisities: UINF	/ZTSP/16							
Conditions for cours	e completi	on:						
Learning outcomes:								
 Brief outline of the course: 1. Characteristics of modern systems, effective solutions for the management and operation of the institution, fundamental processes in the institution of government, support for the process from the system - the meaning and impact of SAP, processes and SAP modules, support in terms of functionality, technical and implementation, user roles and profiles in SAP, analysis of realized case studies of SAP deployment in the conditions of the company. 2. SAP ERP Financials (FI) - basic concepts of financial accounting, basic characteristics of FI. FI components. Principles and organizational elements of FI. Principle of documentation, accounting periods, FI master data (chart of accounts, accounting groups, general ledger (GL) accounts, account balances, control accounts). 34. FI - general and secondary books, general ledger accounting, entering general ledger account documents, display of GL document, display / change of GL account items, display of account balances, cancellation of document - cancellation. 5. FI - withdrawal from the cashier to the bank account, posting the subsidy to the cashier, posting of the sent payment according to the bank statement. 								
Recommended litera	ture:							
Course language:								
Notes:								
Course assessment Total number of assessed students: 77								
abs		n	neabs					
94.81		2.6	2.6					
Provides: Ing. Slávka	ı Šimková,	PhD., RNDr. Slavka Blichová						

Date of last modification: 30.08.2021

Approved:

University: P. J. Šafá	rik Univers	ity in Košice					
Faculty: Faculty of S	cience						
Course ID: ÚINF/ ZTSP/16	Course name: Essentials of the SAP Technology						
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 0 / 2 Per study period: 0 / 28 Course method: present							
Number of ECTS cr	edits: 2						
Recommended seme	ster/trimes	ter of the course: 3., 5.					
Course level: I., N							
Prerequisities:							
Conditions for cours	se completi	on:					
Learning outcomes:							
 Brief outline of the course: 1. Enterprise information systems - enterprise architecture, processes, deployment of enterprise IS. Introduction to mySAP technology. SAP - benefits, distribution, components, modules, transactions, economic benefits of deployment in the organization. 2. SAP applications and components, overview of SAP solutions for large, medium and small businesses. SAP technology infrastructure (client / server architecture, transactions, client as a logically integrated organizational unit, job positions). 3. SAP basics and navigation - login, SAP screen elements, form design, system movement, use of standard keys and screen icons, transaction start, input fields, command shortcuts, Favorites tab, user-specific settings. 4. SAP basics and navigation - multiple modes, command shortcuts, searching and displaying data - variants, output format - changing and saving the layout, creating a report. 5. SAP basics and navigation - Business Workplace, report printing, report export to local file, system information. 							
Recommended litera	ature:						
Course language:							
Notes:							
Course assessment Total number of assessed students: 340							
abs n neabs							
96.76		1.18	2.06				
Provides: Ing. Slávka Šimková, PhD., RNDr. Slavka Blichová							
Date of last modifica	Date of last modification: 30.08.2021						

Approved:

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	of Science						
Course ID: ÚIN FAN/15	e ID: ÚINF/ Course name: Forensic analysis						
Course type, sco Course type: L Recommended Per week: 2 / 2 Course method	ope and the met ecture / Practice course-load (h Per study peri l: present	thod: ours): od: 28 / 28					
Number of EC'I	'S credits: 4						
Recommended s	semester/trimes	ster of the cours	e: 6.				
Course level: I.,	II.						
Prerequisities: U	ÚINF/BPD1/15						
Conditions for c	course completi	on:					
Learning outcom	mes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	e:						
Notes:							
Course assessme Total number of	ent assessed studen	ts: 19					
A	В	С	D	Е	FX		
26.32	36.84	21.05	10.53	5.26	0.0		
Provides: RNDr	. JUDr. Pavol So	okol, PhD.					
Date of last mod	lification: 03.05	5.2015					
Approved:							

University: P. J.	. Šafárik Univers	sity in Košice					
Faculty: Faculty	y of Science						
Course ID: ÚIN FUN1/15	NF/ Course n	F/ Course name: Functional programming					
Course type, sc Course type: I Recommended Per week: 2 / 2 Course metho	ope and the me Lecture / Practico d course-load (h 2 Per study peri d: present	thod: e iours): iod: 28 / 28					
Number of EC	ΓS credits: 4						
Recommended	semester/trime	ster of the cours	e: 5.				
Course level: I.							
Prerequisities:	ÚINF/PAZ1a/15	and leboÚINF/e	PAZ1a/15				
Conditions for	course complet	ion:					
Learning outco To learn bases o and basic metho	f declarative pro	gramming (as contained to the second state of	mplementary me nal programmir	ethod to procedura 1g languages.	l programming)		
Brief outline of Principles of f languages point Haskell: the stru and induction, t	the course: functional program of view. Proper acture of the lang rees	camming. Lambouties of functional guage and basic contents of the second state of the	da calculus fro programming la omputational rul	om the functional anguages. Progran le, basic data types	l programming nming language , lists, recursion		
Recommended BIRD, R., WAI 1988. LIPOVAČA, M	literature: DLER, P.: Introd	uction to Functio skell for Great G	nal Programmir ood!. Free from	ng. Prentice Hall In http://learnyouaha	nternational, askell.com/		
Course languag	ge:						
Notes:							
Course assessm Total number of	lent f assessed studer	nts: 250					
А	В	C	D	Е	FX		
21.6	15.2	15.6	14.4	32.4	0.8		
Provides: prof.	RNDr. Stanislav	Krajči, PhD., do	c. RNDr. Ondre	ej Krídlo, PhD.	-		
Date of last mo	dification: 03.0	5.2015					
Approved:							

University: P. J.	Šafárik Univer	sity in Košice				
Faculty: Faculty	of Science					
Course ID: ÚFV GRP/13	P/13 Course name: GRID computing					
Course type, sco Course type: Le Recommended Per week: 1 / 2 Course method	pe and the me ecture / Practic course-load (I Per study per : present	ethod: e nours): iod: 14 / 28				
Number of ECT	S credits: 3		6			
Recommended s	emester/trime	ester of the cours	e: 6.			
Course level: I.						
Prerequisities:						
Conditions for co	ourse complet	ion:				
Learning outcon	nes:					
Brief outline of t	he course:					
Recommended li	terature:					
Course language	•					
Notes:						
Course assessme Total number of a	nt assessed stude	nts: 7				
A	В	С	D	Е	FX	
100.0	0.0	0.0	0.0	0.0	0.0	
Provides: RNDr.	Martin Val'a, I	PhD.		1		
Date of last mod	ification: 30.0	3.2020				
Approved:						

University: P. J.	Šafárik Univers	sity in Košice					
Faculty: Faculty of Science							
Course ID: ÚGI GIS/15	E/ Course na	Course name: Geographic Information Systems					
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present							
Number of ECT	S credits: 6						
Recommended	semester/trime	ster of the cours	se: 5.				
Course level: I.,	II						
Prerequisities:							
Conditions for a The assessment the examination 1 written test in assignment and in case he or sh mark is the result exam. The final the E mark in co the assessment: points), FX (0-4	Conditions for course completion: The assessment is a combination of continual control during the practicals and the final exam in the examination period. The continual assessment is performed during the semester and it involves 1 written test in the mid-term of the semester and a project report generated according to the assignment and practical skills acquired during the practicals. The student can go for the final exam in case he or she acquired at least the E mark in the continual assessment. The final assessment mark is the result of the average of the marks received in the mid-term test, project report and final exam. The final exam is a written test. The credits are given in case the student had reached at least the E mark in continual assessment and final exam. The following marking scheme is applied in the assessment: A (100-90 points), B (80-89 points), C (70-79 points), D (60-69 points), E (50-59						
Learning outcome The student will Sensing. The stu- conduct basic sp custom geodata,	Learning outcomes: The student will understand the basics of the theory of geoinformation science, GIS, and Remote Sensing. The student will be able perform tasks in a GIS software, generate thematic amps and conduct basic spatial analyses such as spatial querries, atribute querries, terrain modelling, editing custom geodata importing geodata						
Brief outline of	the course:						
Recommended	literature:						
Course languag Slovak or Czech	e: 1 or English						
Notes:							
Course assessment Total number of assessed students: 344							
A	В	C	D	E	FX		
29.65	25.0	25.58	13.37	6.4	0.0		
Provides: doc. N	/Igr. Michal Gal	lay, PhD., Mgr. M	Michaela Nováko	ová			
Date of last mod	Date of last modification: 16.09.2017						

Approved:

University: P. J.	Šafárik Univers	sity in Košice				
Faculty: Faculty	of Science					
Course ID: ÚIN ANO/15	Irse ID: ÚINF/Course name: Image analysisO/15					
Course type, sco Course type: L Recommended Per week: 2 / 2 Course method	ppe and the me ecture / Practice course-load (h Per study peri l: present	thod: e iours): iod: 28 / 28				
Number of ECT	S credits: 4					
Recommended s	semester/trime	ster of the cours	e: 3., 5.			
Course level: I.,	II.					
Prerequisities:						
Conditions for c	ourse complet	ion:				
Learning outcor	nes:					
Brief outline of	the course:					
Recommended I	iterature:					
Course language	e:					
Notes:						
Course assessme Total number of	ent assessed studer	nts: 25				
Α	В	C	D	E	FX	
12.0	20.0	24.0	8.0	36.0	0.0	
Provides: doc. In	ng. Zoltán Tomo	ori, CSc., doc. RN	Dr. Jozef Jiráse	k, PhD.		
Date of last mod	lification: 03.03	5.2015				
Approved:						

University: P. J. Šafárik University in Košice							
Faculty: Faculty	of Science						
Course ID: ÚIN MIN1/15	Course ID: ÚINF/Course name: Informatics for medicineMIN1/15						
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present							
Number of ECT	S credits: 2						
Recommended	semester/trimes	ster of the cours	e: 3., 5.				
Course level: I.,	II.						
Prerequisities:							
Conditions for of Oral and written	course complet i exam	ion:					
Learning outcome To present an approximation of the conditions for so	mes: oplication of cor o-called safety-r	nputer science in elevant domain.	medicine doma	in with emphasis	on the specific		
Brief outline of Software develo MS .NET, C#, O used software to RationalRose, R company mange	the course: opment go med C++. Developm ols: equisitePro, UI ement according	dicine domain (1 ent based on so- TA, Caliber, Clea to CMMI metho	radiotherapy an called "V" deve rCase. Quality a dology.	d ultrasound). S lopment model. A and process manag	yngo platform, An overview of gement and SW		
Recommended http://www.syng http://www.siem	literature: go.com uens.com						
Course languag	e:						
Notes:							
Course assessm Total number of	Course assessment Total number of assessed students: 80						
A	В	C	D	E	FX		
76.25 23.75 0.0 0.0 0.0 0.0							
Provides: doc. RNDr. Gabriela Andrejková, CSc.							
Date of last mod	lification: 03.05	5.2015					
Approved:							

University: P. J.	Šafárik Univers	ity in Košice				
Faculty: Faculty	of Science					
Course ID: ÚIN MIN2/15	Course ID: ÚINF/ Course name: Informatics for medicine //IN2/15					
Course type, sco Course type: P Recommended Per week: 2 Pe Course method	ope and the me ractice course-load (h r study period: l: present	thod: ours): 28				
Number of ECT	S credits: 3					
Recommended s	semester/trimes	ster of the course	e: 6.			
Course level: I.,	II.					
Prerequisities: U	ÚINF/MIN1/15					
Conditions for c	ourse completi	on:				
Learning outco	mes:					
Brief outline of	the course:					
Recommended	literature:					
Course languag	e:					
Notes:						
Course assessme Total number of	ent assessed studen	ts: 7				
Α	В	С	D	E	FX	
71.43	0.0	14.29	0.0	14.29	0.0	
Provides: doc. R	NDr. Gabriela	Andrejková, CSc.		L1		
Date of last mod	lification: 03.05	5.2015				
Approved:						

University: P. J.	Šafárik Univers	sity in Košice					
Faculty: Faculty	of Science						
Course ID: ÚINI MAIN/15	F/ Course n a	Course name: Interdisciplinary applications of informatics					
Course type, sco Course type: Recommended Per week: Per Course method	pe and the me course-load (h study period: : present	thod: nours):					
Number of ECT	S credits: 4						
Recommended s	emester/trime	ster of the cours	e:				
Course level: I.							
Prerequisities: (UPOF1b/99 and let NOT1b/03)	ÚINF/ANO/15 xoÚFV/UPF1/1	and leboÚINF/A 2),(ÚINF/UNS1/	FJ1a/15),(ÚINF, /15 and leboÚIN	/ASU1/15 and leb IF/UNV1/15 and l	ooÚFV/ leboÚFV/		
Conditions for co	ourse complet	ion:					
Learning outcon	nes:						
Brief outline of t	he course:						
Recommended li	iterature:						
Course language	2:						
Notes:							
Course assessme Total number of	ent assessed studer	nts: 7					
A	В	С	D	E	FX		
14.29	14.29	42.86	14.29	14.29	0.0		
Provides:				·			
Date of last mod	ification: 25.04	4.2021					
Approved:							

University: P. J. Ša	afárik Univers	sity in Košice				
Faculty: Faculty of	f Science					
Course ID: ÚINF/ ZIV1/16	D: ÚINF/ Course name: Internet of Things					
Course type, scope Course type: Prace Recommended co Per week: 2 Per s Course method:	e and the me ctice ourse-load (h study period: present	thod: ours): 28				
Number of ECTS	credits: 2					
Recommended ser	nester/trime	ster of the cours	e: 4., 6.			
Course level: I.						
Prerequisities: ÚI	NF/PAZ1a/15	and leboÚINF/el	PAZ1a/15			
Conditions for cou	irse completi	ion:				
Learning outcome	es:					
Brief outline of th	e course:					
Recommended lite	erature:					
Course language:						
Notes:						
Course assessmen Total number of as	t sessed studer	ıts: 47				
A	В	C	D	Е	FX	
74.47	8.51	6.38	2.13	4.26	4.26	
Provides: RNDr. F	rantišek Galč	ík, PhD., RNDr. 1	Miroslav Opiela,	PhD.		
Date of last modif	ication: 03.02	2.2021				
Approved:				-		

University: P. J. Safá	University: P. J. Šafárik University in Košice				
Faculty: Faculty of S	cience				
Course ID: Dek. PF UPJŠ/USPV/13	Course ID: Dek. PF Course name: Introduction to Study of Sciences UPJŠ/USPV/13				
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: Per study period: 12s / 3d Course method: present					
Number of ECTS cro	edits: 2				
Recommended seme	ster/trimester of the cours	e: 1.			
Course level: I.					
Prerequisities:					
Conditions for cours	e completion:				
Learning outcomes:					
Brief outline of the c	ourse:				
Recommended litera	iture:				
Course language:					
Notes:					
Course assessment Total number of assessed students: 1734					
abs n					
86.51 13.49					
Provides: doc. RNDr. Marián Kireš, PhD.					
Date of last modification: 25.09.2019					
Approved:					

University: P. J. Ša	afárik Univers	ity in Košice					
Faculty: Faculty of	Faculty: Faculty of Science						
Course ID: ÚINF/ UGR1/15	VF/ Course name: Introduction to computer graphics						
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present							
Number of ECTS	credits: 5						
Recommended ser	nester/trimes	ster of the course	: 3., 5.				
Course level: I., II							
Prerequisities:							
Conditions for cou	ırse completi	on:					
Learning outcome To provide the stu graphics.	es: dents with know	owledge of graph	ics algorithms	and basic princip	les of computer		
Graphics hardware drawing 2D primit spline forms, Bézie perspective and p Rendering technic computer animatio	Brief outline of the course: Graphics hardware, input and output devices. Color models, palettes. Raster graphics algorithms for drawing 2D primitives. Filling and clipping. Curve modeling, interpolations and approximations, spline forms, Bézier curves, B-splines, surfaces. Homogenous coordinates, affine transformations, perspective and parallel projections. Visible-surface determination, illumination and shading. Rendering techniques, photorealism, textures, ray tracing, radiosity. Object representations, computer animation, virtual reality.						
Recommended literature: FOLEY, J. D., van DAM, A., FEINER, S., HUGHES, J.: Computer Graphics: Principles and Practice, Addison-Wesley, 1991 MORTENSON, M.E.: Geometric modeling, 2.ed., Willey, 1997							
Course language:							
Notes:							
Course assessment Total number of assessed students: 297							
Α	B C D E FX						
13.8	10.44	13.8	23.57	29.97	8.42		
Provides: doc. RNDr. Jozef Jirásek, PhD., RNDr. Rastislav Krivoš-Belluš, PhD.							
Date of last modification: 03.05.2015							
Approved:							
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University: P. J.	. Šafárik Univers	ity in Košice						
Faculty: Faculty	y of Science							
Course ID: ÚIN UIB1/17	ÚINF/ Course name: Introduction to information security							
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	ope and the met Lecture d course-load (h er study period: d: present	thod: ours): 28						
Number of EC	FS credits: 3							
Recommended	semester/trimes	ster of the cours	e: 5.					
Course level: I.	, N							
Prerequisities:								
Conditions for	course completi	on:						
Learning outco	mes:							
Brief outline of	the course:							
Recommended	literature:							
Course languag	ge:							
Notes:								
Course assessm Total number of	ent f assessed studen	ts: 56						
А	В	С	D	Е	FX			
37.5	37.5 37.5 14.29 7.14 1.79 1.79							
Provides: RND	r. JUDr. Pavol So	okol, PhD.						
Date of last mo	dification: 27.03	3.2019						
Approved:								
1								

University: P. J.	. Šafárik Univer	sity in Košice					
Faculty: Faculty	y of Science						
Course ID: ÚIN UPR1/15	Course ID: ÚINF/ Course name: Introduction to law for informatics JPR1/15						
Course type, sc Course type: I Recommended Per week: 2 / 1 Course metho	ope and the m Lecture / Practic d course-load (Per study per d: present	ethod: ce hours): riod: 28 / 14					
Number of EC	FS credits: 4						
Recommended	semester/trim	ester of the cours	se: 3.				
Course level: I.							
Prerequisities:							
Conditions for Written final ex	course comple am (score at lea	tion: ast 50%)					
Learning outco To provide theor knowledge in th	mes: retical backgrou ne Slovak privat	nd for studying co e and public law.	omputer science i	n general, by giv	ing the necessary		
Brief outline of (1) Introduction (2) Introduction (3) Introduction (4) Introduction (5) Introduction (6) Introduction (7) Introduction	the course: to concepts of to Civil law to Commercia to Labor law to Administrat to Tax law to criminal law	law and legal the l law ive law	ory				
Recommended (1) Selected slo	literature: vak legislation						
Course languag	ge:						
Notes:							
Course assessme Total number of	ent f assessed stude	nts: 12					
А	A B C D E FX						
25.0 16.67 16.67 16.67 25.0 0.0							
Provides: RNDr. JUDr. Pavol Sokol, PhD.							
Date of last mo	dification: 14.0	01.2020					
Approved:							

University: P. J. Šafá	University: P. J. Šafárik University in Košice						
Faculty: Faculty of S	Faculty: Faculty of Science						
Course ID: ÚINF/ UNS1/15	Course name: Introduction to neural networks						
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 28 esent						
Number of ECTS cr	edits: 5						
Recommended seme	ster/trimester of the course: 3., 5.						
Course level: I., II.							
Prerequisities:							
Conditions for cours The condition for part networks, successful algorithms, as well as	te completion: ssing the course is the realization of a project with the application of neural completion of two written tests in the field of neural networks and genetic s successful completion of the written and oral part of the exam.						
Learning outcomes: The result of the educe algorithms. The stude analysis and also wor	ation is an understanding of the basic principles of neural networks and genetic ent will gain the ability to apply the acquired knowledge in intelligent data k with a selected tool for modeling neural networks.						
 Brief outline of the c Basic concept arisis calculable by thresho Perceptrons. Linea learning rule, higher of Forward neural remethod. Recurrent neural renergy function, learn Model of gradually recognition phase, see Applications of study. Written test I. Motivation to modified to model 	ourse: ng from biology. Linear threshold units, polynomial threshold units, functions ld units. r separable objects, adaptation process (learning), convergence of perceptron order perceptrons. networks, hidden neurons, adaptation process (learning), backpropagation networks. Hopfield neural networks, properties, associative memory model, ning, optimization problems (business traveler problem). v created network. ART network, architecture, operations, initialization phase, arch and adaptation phase. Use of the ART network. died models in solving practical problems. el genetic elements. Genetic algorithm. Application of genetic algorithms.						
 9. Genetic programm blind algorithm and c 10. Genetic and evolu 11. Special techniqu algorithms. 12. Use of genetic alg 13. Written test II. 	ting, root trees, Read's linear code. Basic stochastic optimization algorithms: elimbing algorithm. Forbidden search method. ationary programming with typing, examples of use. Grammatical evolution. thes of evolutionary computations. Selection mechanisms in evolutionary gorithms in training neural networks. Artificial life.						
Recommended litera	iture:						

1. AGGARWAL, Charu C. Neural networks and deep learning: a textbook. Cham: Springer, 2018. ISBN 978-3319944623.

2. KVASNIČKA, Vladimír. Úvod do teórie neurónových sietí. [Slovenská republika]: IRIS, 1997. ISBN 80-88778-30-1.

3. KVASNIČKA, Vladimír. Evolučné algoritmy. Bratislava: Vydavateľstvo STU, 2000. Edícia vysokoškolských učebníc. ISBN 80-227-1377-5.

4. MITCHEL, Melanie. An Introduction to Genetic Algorithms. Cambridge: MIT Press, 2002. ISBN 0-262-63185-7.

5. SINČÁK, Peter, ANDREJKOVÁ, G. Úvod do neurónových sietí, I. diel, Košice: ELFA, 1996. ISBN 808878638X

Course language:

Slovak or English

Notes:

Content prerequisites:

Basics of programming in Python, or another alternative programming language suitable for data analysis

Course assessment

Total number of assessed students: 439

А	В	С	D	Е	FX
14.12	17.08	22.55	19.13	22.78	4.33

Provides: RNDr. Ľubomír Antoni, PhD., RNDr. Šimon Horvát

Date of last modification: 26.08.2021

Approved:

University: P. J	. Šafárik Univers	ity in Košice						
Faculty: Facult	y of Science							
Course ID: ÚIN UIN1/15	VF/ Course name: Introduction to study of informatics							
Course type, sc Course type: 1 Recommended Per week: 2/2 Course metho	cope and the met Lecture / Practice d course-load (h 2 Per study perio d: present	hod: ours): od: 28 / 28						
Number of EC	TS credits: 5							
Recommended	semester/trimes	ter of the cours	e: 1.	_				
Course level: I.								
Prerequisities:								
Conditions for	course completi	on:						
Learning outco	omes:							
Brief outline of	the course:							
Recommended	literature:							
Course languag	ge:							
Notes:								
Course assessm Total number of	nent f assessed studen	ts: 284						
А	В	С	D	Е	FX			
43.31	43.31 17.25 13.38 8.45 3.17 14.44							
Provides: prof.	RNDr. Stanislav	Krajči, PhD., do	c. RNDr. Ondrej	Krídlo, PhD.	<u> </u>			
Date of last mo	dification: 03.05	5.2015						
Approved:								

University: P. J. S	Šafárik Univers	ity in Košice						
Faculty: Faculty	of Science							
Course ID: ÚINF AEO1/15	JINF/ Course name: Legal aspects of electronic commerce							
Course type, scop Course type: Le Recommended Per week: 2 Per Course method:	pe and the met ecture course-load (h study period: present	hod: ours): 28						
Number of ECTS	S credits: 3							
Recommended se	emester/trimes	ter of the cours	e: 4., 6.					
Course level: I., I	II							
Prerequisities:								
Conditions for co	ourse completi	on:						
Learning outcom	nes:							
Brief outline of t	he course:							
Recommended li	terature:							
Course language	:							
Notes:								
Course assessme Total number of a	nt assessed studen	ts: 0						
A	A B C D E FX							
0.0	0.0 0.0 0.0 0.0 0.0 0.0							
Provides: doc. JU	Dr. Regina Hu	čková, PhD., doc	. RNDr. Jozef Ji	rásek, PhD.				
Date of last modi	ification: 03.05	.2015						
Approved:								
University: P. J. Šafá	rik University in Košice							
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Faculty: Faculty of S	cience							
Course ID: ÚINF/ PAI1/13	NF/ Course name: Legal aspects of informatics							
Course type, scope a Course type: Praction Recommended cour Per week: 2 Per stur Course method: press	nd the method: ce rse-load (hours): idy period: 28 esent							
Number of ECTS cr	edits: 2							
Recommended seme	ster/trimester of the course: 2., 4.							
Course level: I.								
Prerequisities:								
Conditions for cours Written final exam (s	se completion: score at least 50%)							
Learning outcomes: To provide theoretica knowledge in the leg	l background for studying computer science in general, by giving the necessary al aspects of information and communications technologies (ICT law).							
Brief outline of the c (1) Introduction to IC (2) Legal acts (3) Electronic signatu (4) Electronic commu (5) Consumer rights (6) Intelectual proper (7) Privacy and perso (8) ISPs and their res (9) Legal aspects of c (10) Cyber crime (11) Legal aspects of	ourse: T law ires erce ty and software law onal data protection ponsibility; cyber security and digital forensics `domain names							
Recommended litera (1) Murray A. Inform Aug 22. (2) Lloyd IJ. Informa (3) Acts of EU law -	iture: nation technology law: the law and society. Oxford University Press; 2013 ation technology law. Oxford University Press; 2017. regulations and directives							
Course language:								

Notes:

Course assessn Total number o	nent f assessed studen	ts: 57				
А	В	С	D	Е	FX	
17.54	17.54 22.81 17.54 14.04 21.05 7.02					
Provides: RND	Provides: RNDr. JUDr. Pavol Sokol, PhD.					
Date of last mo	Date of last modification: 14.01.2020					
Approved:						

Faculty: F. J. Satanic University in Kosice Faculty: Faculty of Science Course ID: ÚINF/ Course name: Logic programming LOP1/15 Course type, scope and the method: Course type, scope and the method: Course type, scope and the method: Course type, Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present Number of ECTS credits: 5 Recommended semester/trimester of the course: 4. Course level: 1., II. Prerequisities: Conditions for course completion: Earn bases of declarative programming (as complementary method to procedural programming and basic methods of implementations of logic programming languages. Bricf outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and operators in composed terms. Predicates for input and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, 1.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 <t< th=""><th>University, D. I.</th><th>Čofáril: Univers</th><th>vitu in Vočico</th><th></th><th></th><th></th></t<>	University, D. I.	Čofáril: Univers	vitu in Vočico						
Faculty: Faculty of Science Course ID: ÚINF/ Course name: Logic programming LOP1/15 Course name: Logic programming Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present Number of ECTS credits: 5 Recommended semester/trimester of the course: 4. Course level: I., II. Prerequisities: Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming and basic methods of implementations of logic programming languages. Brief outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, I.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsison U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: Course language: Notes: <tr< td=""><td>University: F. J.</td><td colspan="6"></td></tr<>	University: F. J.								
Course ID: UINF/ Course name: Logic programming LOP1/15 Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present Number of ECTS credits: 5 Recommended semester/trimester of the course: 4. Course level: 1., II. Prerequisities: Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming and basic methods of implementations of logic programming languages. Brief outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and operators in composed terms. Predicates for input and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, L: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: Course assessment Total number of assessed students: 284 A	Faculty: Faculty	of Science							
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present Number of ECTS credits: 5 Recommended semester/trimester of the course: 4. Course level: 1., II. Prerequisities: Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming and basic methods of implementations of logic programming languages. Brief outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and operators in composed terms. Predicates for input and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, I.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: Course assessment Total number of assessed student	Course ID: UIN LOP1/15	F/ Course na	ame: Logic progr	amming					
Number of ECTS credits: 5 Recommended semester/trimester of the course: 4. Course level: I., II. Prerequisities: Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming and basic methods of implementations of logic programming languages. Brief outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and operators in composed terms. Predicates for input and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, I: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: Course assessment Cotal number of assessed students: 284 D E FX	Course type, sco Course type: L Recommended Per week: 2 / 2 Course method	Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present							
Recommended semester/trimester of the course: 4. Course level: I., II. Prerequisities: Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming and basic methods of implementations of logic programming languages. Brief outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and operators in composed terms. Predicates for input and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, I.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: Course assessment Total number of assessed students: 284 A B C D E FX	Number of ECT	S credits: 5							
Course level: I., II. Prerequisities: Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming and basic methods of implementations of logic programming languages. Brief outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and operators in composed terms. Predicates for input and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, I.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: Course assessment Total number of assessed students: 284 A B C D E FX	Recommended s	semester/trimes	ster of the course	e: 4.					
Prerequisities: Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming and basic methods of implementations of logic programming languages. Brief outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and operators in composed terms. Predicates for input and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, I.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: Image: I	Course level: I.,	II.							
Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming and basic methods of implementations of logic programming languages. Brief outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and operators in composed terms. Predicates for input and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, I.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: Course assessment Total number of assessed students: 284 A B C D E FX	Prerequisities:								
Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming and basic methods of implementations of logic programming languages. Brief outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and operators in composed terms. Predicates for input and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, I.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: A B C D E FX	Conditions for c	ourse completi	ion:						
Brief outline of the course: Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists Functors and operators in composed terms. Predicates for input and output. Dynamic database Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions. Recommended literature: Bratko, I.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: Call anumber of assessed students: 284 A B C D E FX	Learning outcor To learn bases of and basic metho	mes: declarative pro ds of implemen	gramming (as con tations of logic pr	nplementary met ogramming lang	hod to procedura guages.	l programming)			
Recommended literature: Bratko, I.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997 Course language: Notes: Course assessment Total number of assessed students: 284 A B C D E FX	Facts and rules i backtrack in Pro Functors and op Cycles (repeat-fa expressions.	Facts and rules in Prolog. Unification of terms (Robinson's unification algorithm). Recursion and backtrack in Prolog. Computational step and computational tree. Classification of terms. Lists. Functors and operators in composed terms. Predicates for input and output. Dynamic database. Cycles (repeat-fail, for). Predicates related to backtrack. Cut. Predicates evaluating of arithmetic expressions.							
Course language: Notes: Course assessment Total number of assessed students: 284 A B C D E FX	Recommended literature: Bratko, I.: Prolog – programming for artificial intelligence, third edition. Addison-Wesley, 2001 Nilsson U., Maluszynski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995 Nienhuys-Cheng Sh.H., Wolf R.: Foundations of Inductive Logic Programming, Springer-Verlag, 1997								
Notes:Course assessmentTotal number of assessed students: 284ABCDEFX	Course language	e:							
Course assessmentTotal number of assessed students: 284ABCDEFX	Notes:								
A B C D E FX	Course assessme Total number of	ent assessed studen	nts: 284						
	A	В	C	D	Е	FX			
22.18 12.68 14.08 24.3 25.0 1.76	22.18	12.68	14.08	24.3	25.0	1.76			
Provides: doc. RNDr. Ondrej Krídlo, PhD., prof. RNDr. Stanislav Krajči, PhD.	Provides: doc. R	NDr. Ondrej Ku	rídlo, PhD., prof.	RNDr. Stanislav	Krajči, PhD.				
Date of last modification: 03.05.2015	Date of last mod	lification: 03.05	5.2015						
Approved:	Approved:								
22.1812.6814.0824.325.01.76Provides: doc. RNDr. Ondrej Krídlo, PhD., prof. RNDr. Stanislav Krajči, PhD.Date of last modification: 03 05 2015									

University: P. I. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ MTL/15	Course name: MATLAB and neurocognition
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course: 3., 5.
Course level: I.	
Prerequisities:	
Conditions for cours Written quizes, midte	e completion: erm and final exam.
Learning outcomes: Intro to programming	; in MATLAB with focus on its usage in neural and cognitive Science.
Brief outline of the c 1. Intro to Matlab 2. Navigation, interact 3. Interaction with hu 4. Auditory and visua 5. Analysis and visua 6. Analysis of neurop 7. Analysis of neurop 7. Analysis of neurop 8. Cognitive and neurop 9. Auditory modeling 10. Visual modeling 11. Tools for modeling 12. Tools for psychol	ourse: tion, variables, vectors, matrices, scripts, toolboxes mans in behaviroal experiments il stimulus generation lization of behavioral data hysiological data maging data. ral modeling in Matlab tools
Recommended litera 1. Wallisch P, et al. M MATLAB. Academic 2. Stork D, Yom-Tow 2nd Edition, Wiley, 2 3. Dayan P and LF A Modeling of Neural S	ture: IATLAB for Neuroscientists: An Introduction to Scientific Computing in Press 2008. ISBN-13: 978-0123838360 E: Computer Manual in MATLAB to accompany Pattern Classification, 004 ISBN-13: 978-0471429777 bbott: Theoretical Neuroscience - Computational and Mathematical Systems. MIT Press, 2005 ISBN-13: 978-0262541855
Course language: Slovak or English	
Notes: Content prerequisitie basic programing ski	s: Ils or instructor's consent

Course assessm Total number o	nent f assessed studen	ts: 8					
А	В	С	D	Е	FX		
25.0	25.0 25.0 12.5 37.5 0.0 0.0						
Provides: doc.]	Provides: doc. Ing. Norbert Kopčo, PhD., Ing. Peter Lokša, PhD.						
Date of last modification: 08.07.2021							
Approved:							

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	of Science						
Course ID: ÚIN MIS/15	IF/ Course na	F/ Course name: Management of information systems					
Course type, sco Course type: L Recommended Per week: 1 / 2 Course method	ope and the met Lecture / Practice I course-load (h 2 Per study perio d: present	thod: ; ours): od: 14 / 28					
Number of ECT	S credits: 4						
Recommended	semester/trimes	ster of the course	e: 4., 6.				
Course level: I.							
Prerequisities:							
Conditions for a	course completi	on:					
Learning outco	mes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	je:						
Notes:	,						
Course assessm Total number of	ent assessed studen	ts: 21					
Α	B C D E FX						
19.05	42.86 14.29 19.05 0.0 4.76						
Provides: prof. 1	RNDr. Gabriel S	emanišin, PhD., 1	MSc. Terézia Mé	zešová	1		
Date of last mod	dification: 22.05	5.2018					
Approved:							

University: P. J. Šafá	rik University in Košice							
Faculty: Faculty of S	Science							
Course ID: ÚMV/ MZIa/10	V/ Course name: Mathematical foundations of informatics I							
Course type, scope a Course type: Lectur Recommended cou Per week: 2 / 2 Per Course method: pre	and the method: re / Practice rse-load (hours): study period: 28 / 28 esent							
Number of ECTS cr	redits: 6							
Recommended seme	ester/trimester of the course: 1.							
Course level: I.								
Prerequisities:								
Conditions for cours Two tests and compl evaluation and exam	se completion: etion of individual homework. Assessment is given on the basis of semestral ination test.							
Learning outcomes: To obtain basic math become familiar with work with mathemat various types of prob	ematical knowledge in arithmetic, linear algebra and elementary calculus. To h the applications of some fundamental mathematical concepts. To learn to tical software and together with the acquired knowledge to use it in solving blems.							
Brief outline of the c Integers and divisib congruence classes. Functions and their p of a function. Applic	course: wility. Prime numbers and congruences. Applications of congruences and Matrices and determinants. Applications of matrices and determinants. roperties. Elementary functions. Limit of a function. Continuity and derivative ations of derivatives.							
Recommended litera Hallet D. H. (2014). Koshy T. (2007). Ele Lay D. C. (2012). Lin Studenovská D., Mac Studenovská D., Mac nematematické odbo Zimmermann P. et al	Applied Calculus. John Wiley & Sons. Ementary Number Theory with Applications. Elsevier. near Algebra And Its Applications. Boston: Addison-Wesley. daras T. (2006). Matematika pre nematematické odbory. UPJŠ. daras T., Mockovciak S. (2006). Zbierka úloh z matematiky pre ry. UPJŠ. . (2018). Computational Mathematics with SageMath. Springer.							
Course los que que								
Slovak								

Course assessn Total number o	nent f assessed studen	ts: 197				
А	В	С	D	Е	FX	
0.51	0.51 9.64 9.64 19.29 47.72 13.2					
Provides: RND	Provides: RNDr. Andrej Gajdoš, PhD.					
Date of last mo	Date of last modification: 19.09.2020					
Approved:						

University: P. J. Šafárik University in Košice								
Faculty: Faculty	Faculty: Faculty of Science							
Course ID: ÚM MZIb/10	V/ Course n	ame: Mathematic	al foundations o	f informatics II				
Course type, sc Course type: 1 Recommended Per week: 2 / 2 Course metho	Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present							
Number of EC	FS credits: 6							
Recommended	semester/trime	ster of the course	e: 2.					
Course level: I.								
Prerequisities:	ÚMV/MZIa/10							
Conditions for Based on results Based on semes	course complet s of two tests an tral evaluation a	ion: d individual home ind examination to	eworks. est.					
Learning outco To extend the equations and ir	mes: obtained knowl nfinite series.	edge in mathema	atics by topics i	n integral calcul	us, differential			
Brief outline of Indefinite and d criteria. Series expansion.	Brief outline of the course: Indefinite and definite integral and their applications. Differential equations. Series, convergence criteria. Series of functions, Taylor expansion. Periodic functions, trigonometric series, Fourier expansion							
Recommended literature: Huťka, Benko, Ďurikovič: Matematika, Alfa, Bratislava 1991 D. Studenovská, T. Madaras, S. Mockovčiak: Zbierka úloh z matematiky pre nematematické odbory, UPJŠ 2006 D. Studenovská, T. Madaras: Matematika pre nematematické odbory, UPJŠ 2006 J. Ivan: Matematika 2, Alfa, Bratislava 1989 T. Katriňák a kol.: Algebra a teoretická aritmetika. Alfa. Bratislava 1986								
Course languag Slovak	je:							
Notes:								
Course assessm Total number of	ent assessed studer	nts: 123						
А	В	C	D	Е	FX			
2.44	9.76	8.94	22.76	49.59	6.5			
Provides: RND	. Andrej Gajdos	s, PhD.		<u> </u>				
Date of last mo	dification: 03.0	5.2015						

Approved:

University: P. J. Safá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ MPJ1/15	Course name: Modern programming languages
Course type, scope a Course type: Lectur Recommended cour Per week: 1 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 14 / 28 esent
Number of ECTS cro	edits: 4
Recommended seme	ster/trimester of the course: 6.
Course level: I., II.	
Prerequisities: ÚINF	/PAZ1b/15
Conditions for cours Written works during Written and oral exar	e completion: the semester, project. n.
Learning outcomes: The aim of the course and accelerating the c	is to provide an overview of programming models and techniques for effective creation and reuse of code using C#.
 Brief outline of the c 1) Common type systematic (CLR)NE 2) Imperative and p Module. 3) Generic programmed 4) Functional program 4) Functional programmed 5) LINQ and queryin 6) Event programmed 7) Communication besides 8) Graphic primitives 9) Database application 10) Vector programmed 11) MS Office programmed 12) .NET Core. Tuple 	ourse: stem, boxing, Common Intermediate Language (CIL), Common Language CT Framework. rocedural programming. OOP, libraries, classes, assembly, reflection and hing - parametric polymorphism. nming - lambda expressions. g data structures. g - delegates. etween windows. Design of new controls. and Chart. ons, ADO.NET, Entity Framework. hing - operator overloading, indexer. mming using C#. e vs record.
Recommended litera 1. J. Glynn, Cs. Törö ISBN-10: 186100766 2. A. Troelsen, Ph. Ja Programming, 2021, 3. J. Albahari, C# 9.0 1098100964 4. C. Solis, C. Schrot and Visually. 2018	ture: k et al, Professional Windows GUI Programming Using C#, 2002, Wrox, apikse, Pro C# 9 with .NET 5 : Foundational Principles and Practices in Apress, ISBN10 1484269381 in a Nutshell : The Definitive Reference, 2021, O'Reilly Media, ISBN10 enboer, Illustrated C# 7 : The C# Language Presented Clearly, Concisely, Apress, ISBN10 1484232879

Course langua Slovak or Engl	ge: ish.						
Notes: If necessary, tea	aching, mid-term	and final evalua	tion will be by d	istance form.			
Course assessn Total number o	nent f assessed studen	ıts: 146					
А	В	С	D	E	FX		
16.44	16.44 19.86 23.97 20.55 17.81 1.37						
Provides: doc.	RNDr. Csaba Tö	rök, CSc.	•				
Date of last mo	dification: 02.07	7.2021					
Approved:							

University: P. I. Šafárik University in Košice							
Faculty of Science							
Course ID: ÚINE/ Course name: Modern web technologies							
MWT1/19							
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present							
Number of ECTS credits: 5							
Recommended semester/trimester of the course: 6.							
Course level: I., II.							
Prerequisities:							
Conditions for course completion: Active attendance at seminars, defense of final group project. The final project is partially created on seminars.							
Learning outcomes: Ability to design and create dynamic scalable SPA - SIngle Page Application using Angular and Spring Boot.							
Brief outline of the course: - Selected part of Javascript and Typescript, High order functions, composition of pure functions, Angular - components, services, Observable, router, localStorage, form validation, comunication in component hierarchy, modules, hierarchical routing, routing guards, RXJS, material components library, NGXS storage and its extensions, reactive forms, custom validators, asynchronous validators, pagination, filtering and sorting of local and remote data in tables, Websockets.							
 Recommended literature: 1. web page of framework Angular: https://angular.io/ 2. web page of Angular Material: https://material.angular.io/ 3. web page of storage NGXS: https://www.ngxs.io/ 4. web page of library RXJS: https://rxjs-dev.firebaseapp.com/guide/overview 5: Craig Walls: Spring in action. Fifth edition. ISBN: 978-1-61729-494-5. Hanning 2019 							
Course language: slovak							
Notes:							
Course assessment Total number of assessed students: 20							
A B C D E FX							
65.0 0.0 10.0 20.0 5.0 0.0							
Provides: RNDr. Peter Gurský, PhD.							
Data of last modification, 00 07 2021							

Approved:

University: P. J. Šafárik University in Košice
Faculty: Faculty of Science
Course ID: ÚINF/ SKB1/15Course name: Network and communication security
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present
Number of EC18 credits: 5
Recommended semester/trimester of the course: 4., 6.
Course level: I.
Prerequisities: ÚINF/PSIN/15,(ÚINF/UIB1/17 and leboÚINF/UIB1/21)
Conditions for course completion:
Learning outcomes:
Brief outline of the course:
Recommended literature:
Course language:
Notes:
Course assessment Total number of assessed students: 4
A B C D E FX
0.0 0.0 0.0 25.0 50.0 25.0
Provides: prof. RNDr. Gabriel Semanišin, PhD., doc. RNDr. Jozef Jirásek, PhD.
Date of last modification: 07.07.2021
Approved:

University: P. J. Šafá	rik University in Košice			
Faculty: Faculty of S	cience			
Course ID: ÚFV/ NOT1a/03	a/03 Course name: Nontraditional Optimization Techniques I			
Course type, scope a Course type: Lectur Recommended cou Per week: 2 / 2 Per Course method: pre	and the method: re / Practice rse-load (hours): study period: 28 / 28 esent			
Number of ECTS credits: 5				

Recommended semester/trimester of the course: 3., 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Monitoring progress in solving applied projects. examination (50%), quality of the project (50%) examination

Learning outcomes:

To familiarize students with biologically and physically inspired optimization, simulation and prediction techniques. To expand students' creativity and programming skills by applying heuristic techniques in solving applied problems.

Brief outline of the course:

Fundamentals of optimization theory. Basic optimization problems. Basic types of objective functions. Classification of optimization techniques. Gradient-based optimization techniques. Evolutionary algorithms. Genetic algorithms. Genetic algorithms as Markov processes. Statistical Mechanics Approximations of Genetic Algorithms. Monte Carlo simulation and simulated annealing. Swarm optimization. Cellular Automata and their applications in simulations of complex systems. Fractals. Agent-based models. Evolutionary games. Evolution of cooperation. Fundamentals of Neural Networks. Application of singular value decomposition to solve least squares problems.

Recommended literature:

Hartmann, A. K., Rieger, H., Optimization Algorithms in Physics, Wiley, 2002
Reeves, C. R., Rowe, J. E., Genetic Algorithms: Principles and perspectives, Kluwer, 2003
Mitchell, M., Complexity. A Guided Tour, Oxford University Press, 2009
Solé, R. V., Phase Transitions, Princeton University Press, 2011
Ilachinski, A., Cellular Automata. A Discrete universe, World Scientific, 2002
Haykin, S., Neural Networks. A Comprehensive Foundation, Prentice-Hall, 1999

Course language:

Notes:

Course assessment Total number of assessed students: 85						
А	В	С	D	Е	FX	
69.41	16.47	8.24	2.35	3.53	0.0	
Provides: doc.]	Provides: doc. RNDr. Jozef Uličný, CSc.					
Date of last modification: 03.05.2015						
Approved:						

University: P. J.	University: P. J. Šafárik University in Košice							
Faculty: Faculty	Faculty: Faculty of Science							
Course ID: ÚFV NOT1b/03	V/	Course name: Nontraditional Optimization Techniques II						
Course type, sc Course type: 1 Recommended Per week: 2 / 2 Course method	Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present							
Number of EC	ГS cre	edits: 5						
Recommended	seme	ster/trimes	ter of the cours	e: 4., 6.				
Course level: I.,	II.							
Prerequisities:								
Conditions for Presentation of Should corona-	course the previrus c	e completion oject in wri quarantine p	on: itten form. Oral e persist, written re	exam and discus	ssion of the present or to posed question	nted project.		
Learning outco By using examp interpretation of including parasi	mes: oles fro f comj te/hos	om the biol plex system st coevoluti	ogy to learn app ns. Introduction to on.	lications of opti to new paradigr	mization techniques in the area of s	ues on study and systems biology,		
Brief outline of Complex syste optimization te simulated annea dynamics, prot bioinformatics.	Brief outline of the course: Complex systems, emergent behavior. Evolutionary theory and memetics. Application of optimization techniques on complex systems. Application of methods /genetic algorithms, simulated annealing, taboo search/ on selected problems of biomolecular simulations. Molecular dynamics, protein folding. Population dynamics, metabolic networks and complexity in bioinformatics.							
Recommended The actual scien	litera tific p	ture: papers.						
Course languag	ge:							
Notes:								
Course assessm Total number of	ent asses	ssed student	ts: 50					
А		В	С	D	E	FX		
88.0	88.0 4.0 6.0 2.0 0.0 0.0							
Provides: doc. F	RNDr.	Jozef Ulič	ný, CSc.					
Date of last mo	difica	tion: 27.03	.2020					
Approved:								

University: P. J. Šafá	rik University in Košice						
Faculty: Faculty of S	cience						
Course ID: ÚFV/ NUM/10	Course ID: ÚFV/ Course name: Numerical Methods NUM/10						
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 1 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 14 esent						
Number of ECTS cr	edits: 4						
Recommended seme	ster/trimester of the course: 3.						
Course level: I.							
Prerequisities:							
Conditions for cours Continuous evaluatio Evaluation based on attached codes.	e completion: n is based on students' activity in the classroom and work on assignments. written test and all worked assignments submitted electronically with the						
Learning outcomes: To acquaint students for the subsequent co	with basic numerical methods of calculus and algebra, which are necessary urse of computational physics.						
Brief outline of the c 1. Computational solu 2. Approximation of 1 3. Interpolation of fun 4. Approximation by 5. Solution of nonline 6. Numerical method 7. Solution of system 8. Solution of system 9. Numerical integrat 10. Numerical different 11. Eigenvalues and et 12. The complete pro	ourse: ution of problems and errors of numerical solution. functions. nctions. trigonometric polynomials. Fast Fourier analysis. ear equations, convergence conditions and error estimation of the methods. s for solving nonlinear equations. s of linear equations - direct methods. s of linear equations - iterative methods. ion (quadrature) of functions. entiation of functions. eigenvectors of a matrix - partial problem. blem of eigenvalues.						
Recommended litera Basic literature: - C. Pozrikidis: Nume 2008. Other literature: - R.W. Hamming: Nu - A.L. Garcia: Numer	erical Computation in Science and Engineering, Oxford University Press, merical Methods for Scientists and Engineers, Dover, 1973. Fical Methods for Physics, Prentice-Hall, 1994.						
Course language:							
Notes:							

Course assessm Total number o	nent f assessed studen	ts: 130				
А	В	С	D	Е	FX	
15.38	16.92	25.38	22.31	15.38	4.62	
Provides: prof.	Provides: prof. RNDr. Milan Žukovič, PhD.					
Date of last modification: 01.07.2021						
Approved:						

University: P. J. Šafár	ik University in Košice
Faculty: Faculty of So	zience
Course ID: ÚINF/ OSY1/15	Course name: Operating systems
Course type, scope an Course type: Lecture Recommended cour Per week: 2 Per stue Course method: pre	nd the method: e se-load (hours): dy period: 28 sent
Number of ECTS cre	edits: 3
Recommended semes	ster/trimester of the course: 3.
Course level: I.	
Prerequisities: ÚINF/ PRG1/15)	/PRP2/15,(ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15 and leboÚINF/
Conditions for cours Test and oral exam	e completion:
Learning outcomes: To gain knowledge ab multi-process CPU al To be able to apply bas resources for I / O ope	out the basic architecture of the operating system. Understand algorithms for location, interprocess communication, and memory allocation. sic synchronization procedures and to solve problems of allocation of common erations.

Understand the organization of files and their protection by access rights. To be able to practically use the services of the Unix and Windows operating system.

Brief outline of the course:

Operating system structure and basic functions.

Different kinds of operating systems and their history.

Multiprogramming, context switching, interrupts, time sharing, interoperability.

Processes, process management, threads, scheduling, interprocess communication

(race condition, mutual exclusion, deadlock, starvation).

Memory management, relocation, segmentation, paging, virtual memory.

I/O management, device drivers, interrupt handlers.

External memory (disk) - direct and sequential access.

File systems, file operations, directories, access control, access rights.

Recommended literature:

- 1. A. Silberschatz, G. Gagne, P. Baer: Operating System Concepts, Wiley, 2002
- 2. A. S. Tanenbaum: Modern Operating Systems, Prentice-Hall, 2001

Course language:

Notes:

Course assessm Total number o	nent f assessed studen	ts: 304				
А	В	С	D	Е	FX	
22.37	21.71	19.08	25.0	10.53	1.32	
Provides: RND	Provides: RNDr. PhDr. Peter Pisarčík					
Date of last modification: 14.01.2020						
Approved:						

University: P. J	. Šafárik	CUnivers	ity in Košice					
Faculty: Facult	y of Scie	ence						
Course ID: ÚI PDS1/15	NF/ C	/ Course name: Parallel and distributed systems						
Course type, sc Course type: 1 Recommended Per week: 2 / 2 Course metho	Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present							
Number of EC	TS cred	its: 4						
Recommended	semest	er/trimes	ster of the cours	e: 6.				
Course level: I.								
Prerequisities:								
Conditions for	course	completi	on:					
Learning outco to introduce the	o mes: fundar	nentals of	parallel and dis	tributed program	ming			
Brief outline of current parallel development, d	the cou and dis ata struc	tributed actures and	architectures, ba l programming r	sic issues in par nethodologies	allel and distribu	ted applications		
Recommended 1. Kenneth A. H Thomson, 2005 2. Gregory R. A Addison-Wesle 3. Joseph JáJá: 0-201-54856-9 4. Gerard Tel: I 0-521-47069-2	literatu Berman a , ISBN Andrews y, 2000, An Intro ntroduct	and Jeror 0-534-42 Founda ISBN 0- oduction tion to Di	ne L. Paul: Algo 057-5 tions of Multithr 201-35752-6 to Parallel Algor istributed Algori	rithms: Sequenti eaded, Parallel, a ithms, Addison- thms, Cambridge	al, Parallel, and I and Distributed P Wesley, 1992, IS e University Pres	Distributed, Programming, BN s, 1994, ISBN		
Course languag	ge:							
Notes:								
Course assessm Total number of	nent f assesse	ed studen	ts: 133					
А]	В	С	D	Е	FX		
23.31	23.31 16.54 15.04 18.05 15.79 11.28							
Provides: doc.]	RNDr. J	ozef Jirás	sek, PhD.			<u>.</u>		
Date of last mo	dificatio	on: 03.05	5.2015					
Approved:								

University: P. J.	Šafárik Univers	ity in Košice				
Faculty: Faculty	y of Science					
Course ID: ÚF LEK1/99	V/ Course na	Course name: Physical Principles of Medicine Technique				
Course type, sc Course type: I Recommended Per week: 2 Po Course method	ope and the met Lecture I course-load (h er study period: d: present	thod: ours): 28				
Number of EC	FS credits: 3					
Recommended	semester/trimes	ster of the cours	e: 5.			
Course level: I.						
Prerequisities:						
Conditions for	course completi	on:				
Learning outco	mes:					
Brief outline of	the course:					
Recommended	literature:					
Course languag	ge:					
Notes:						
Course assessm Total number of	ent f assessed studen	ts: 35				
А	В	С	D	E	FX	
85.71	85.71 11.43 2.86 0.0 0.0 0.0					
Provides: doc. I	RNDr. Karol Flac	chbart, DrSc.	<u></u>		<u>I</u>	
Date of last mo	dification: 03.05	5.2015				
Approved:						

University: P. J.	University: P. J. Šafárik University in Košice							
Faculty: Faculty	Faculty: Faculty of Science							
Course ID: ÚFV PPLO/15	V/ Course n	Course name: Principles of Computers, Logic Circuits						
Course type, sc Course type: L Recommended Per week: 1 / 1 Course method	Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 1 / 1 Per study period: 14 / 14 Course method: present							
Number of ECT	FS credits: 2							
Recommended	semester/trime	ster of the cours	e: 3.					
Course level: I.								
Prerequisities:								
Conditions for written exam, pr	course complet resence at the la	ion: boratory practice						
Learning outco Student will ob electronic circu knowledge to do measured result	mes: tain knowledge its, as a basic esign and to con s.	about principles unit of computin struct of electron	of functioning, and technology. Solic circuits and he	nalysis and synt Student will use e/she will learn h	hesis of logical his theoretical now to interpret			
Brief outline of 1. Combinatori operations of Bo BDC code, arith circuit as basic logical circuits (sequentional fur	the course: al logical circu polean algebra, l metic addition of memory unit, sy sequentional be nctions and their	its (definitions, VAND, digital mu of two one bit bina (nchronous and a havior, structure a realization, arith	laws of logical ltiplexor and den ry operands). 2. I synchronous swi and stability of se metic unit of digi	algebra, electro nultiplexor, detec Digital memory c tching circuits). quentional logica ital computer)	onic models of etor of errors for fircuits (bistable 3. Sequentional al circuits, basic			
Recommended Petrovič P.: Elek UPJŠ, Košice 20	Recommended literature: Petrovič P.: Elektronika I – Vybrané obvody číslicovej techniky. Skriptum PF, Edičné stredisko UPJŠ, Košice 2003. 2. vydanie: Vydavateľstvo UPJŠ, Košice, 2006.							
Course languag	ge:							
Notes:								
Course assessm Total number of	Course assessment Total number of assessed students: 51							
А	В	C	D	Е	FX			
35.29	47.06	15.69	1.96	0.0	0.0			
Provides: Mgr.	Vladimír Koma	nický, Ph.D.						
Date of last mo	dification: 21.0	9.2015						
Approved:								

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ PRP2/15	Course name: Principles of computers
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 1 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 14 esent
Number of ECTS cr	edits: 4
Recommended seme	ster/trimester of the course: 2.
Course level: I.	
Prerequisities:	
Conditions for cours	e completion:
Learning outcomes: - Know brief history Neumann type. - Understand relation able to perform basic - Learn basics about I principles of how ba memory. - Know principles of memory access. - Get idea of device of	of computer, classification and construction principles of computers of von between real numbers, integers and their binary representation as well as be arithmetic and logic operations over binary represented numbers. ogic gates, combination and sequence circuits and their structure. Understand usic circuits realize arithmetic-logic unit and other parts of computers e.g. communication of processor and other devices via interruptions and direct drivers, device controllers and their functionality.
Brief outline of the c Brief outline of the c - computers of von N - history of computer - binary encoding of - realization of comp - principles of variou - types of memories, - architecture of proc - input and output de - principles of interru - direct memory acce - device drivers, - device controllers, - peripheral devices.	ourse: ourse: eumann type, s, real numbers and integers, uters parts by sequence and combination circuits, s memory cells and memory matrices, essor on levels of digital logic, machine cycle, instruction cycle, vices, ptions, ss,
1. STALLINGS, Will 978-0-13-410161-3.	liam. Computer Organization and Architecture. Prentice Hall, 2002. ISBN

Course language:						
Notes:						
Course assessment Total number of assessed students: 242						
А	B C D E FX					
26.03	26.03 15.7 16.53 13.22 23.14 5.37					
Provides: RNDr. Juraj Šebej, PhD.						
Date of last modification: 09.07.2021						
Approved:	Approved:					

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	Science
Course ID: ÚINF/ PBS/15	Course name: Pro-seminar to bachelor thesis
Course type, scope a Course type: Practi Recommended cou Per week: 1 Per stu Course method: pr	and the method: ce rse-load (hours): ady period: 14 esent
Number of ECTS cr	redits: 1
Recommended seme	ester/trimester of the course: 4.
Course level: I.	
Prerequisities:	
Conditions for cour Creating a website at bachelor's thesis assi motivation to select a into the AIS by the t	se completion: bout a bachelor's thesis. Selection of bachelor thesis topic. Presentation of the gnment and its objectives. Preparation of an essay in the extent of 1 page on the bachelor's thesis. Creation of the bachelor's thesis assignment and its insertion hesis supervisor.
Learning outcomes: Basic knowledge of requirements for sele the bachelor's thesis	' the principles of creation and structure of bachelor's theses. Criteria and ecting an appropriate bachelor thesis topic. Knowledge about the structure of assignment.
Brief outline of the o 1. Principles in creat 2. The presentations 3. The presentations 4. The presentations 5. Bachelor thesis and 6. Assignment of bac 7. Basic types of bac 8. Structure of differ 9. Requirements for 10. External compan 11. Presentation of so 12. Presentation of so 13. Presentation of so	course: ing a final thesis. of bachelor thesis topics by potential supervisors. of bachelor thesis topics by potential supervisors. of bachelor thesis topics by potential supervisors. d its objectives. chelor thesis. helor theses. ent types of bachelor theses. final bachelor theses. y final theses. elected topics of final theses. elected topics of final theses. elected topics of final theses.
Recommended liter 1. STN 01 6910. Rul 2. STN ISO 2145. D 1997. 3. STN ISO 690. Inferences to informa 4. KATUŠČÁK, Dar	ature: es of writing and editing documents. 2011. ocumentation. Numbering of sections and subsections of written documents. formation and documentation. Instructions for creating bibliographic ation sources and their citation. 2012 hiel. How to write final and qualification theses. Enigma, 2013

5. Scientific literature related to the topic of the final thesis according to the recommendation of the thesis supervisor.

Course language:	
Notes:	
Course assessment	
Total number of assessed students: 307	
abs	n
94.14	5.86
Provides: RNDr. Ľubomír Antoni, PhD.	
Date of last modification: 26.08.2021	
Approved:	

University, F. J. Salarik University in Rusice	University:	P. J.	Šafárik	University	v in Košice
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Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Proces modelling
PMO1/15	

Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours):

Per week: 2 / 2 Per study period: 28 / 28

Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 4., 6.

Course level: I.

Prerequisities: (ÚINF/PAZ1b/15 and leboÚINF/ePAZ1b/15),ÚINF/DBS1a/15,ÚINF/SWI1a/15

Conditions for course completion:

The assessment includes the continuous evaluation of partial tasks related to complex project solving during semester.

The final evaluation is awarded on the basis of the continuous evaluation and the result of the exam. The exam requires demonstration of the ability to orientate oneself in the lectured issues, mastering the theoretical foundations of process modeling, basic skills for the creation and interpretation of process models. The exam consists of written and oral part.

Learning outcomes:

To get acquainted with the theoretical foundations of process modeling. To master the basic principles of creating process models. To get acquainted with standard languages for process modeling and gain practical experience in creating models using selected modeling tools.

Brief outline of the course:

Introduction to process modeling. Approaches to the development of large software systems. Theoretical foundations of process modeling. Petri nets. Process orchestration. Process choreography. Selected process properties. Process model architectures. Methodologies and standards.

Recommended literature:

1. Ehrig, H.; Juhas, G.; Padberg, J.; Rozenberg, G. (Eds.), Advances in Petri Nets, Lecture Notes in Computer Science, Vol. 2128 (2001)

2. Eshuis, R. ; Wieringa R.: Comparing Petri Net and Activity Diagram Variants for Workflow Modelling – A Quest for Reactive Petri Nets, [dostupné online http://is.tm.tue.nl/staff/heshuis/pnt.pdf]

3. Madison D., Process Mapping, Process Improvement and Process Management, Paton Press 2005

4. Weske, M. Business Process Management, Springer 2007

5. White S.A., Miers D., Fischer L., BPMN Modeling and Reference Guide, Future Strategies Inc., Lighthouse Pt 2008

6. White:, S.A. Process Modeling Notations and Workflow Patterns, [available online http://www.omg.org/bp-corner/bp-files/Process_Modeling_Notations.pdf]

Course langua Slovak or Engl	ge: ish					
Notes: Content prereq systems, bases	uisities: program of project manag	ming, bases of so	oftware engineeri	ng and database	management	
Course assessment Total number of assessed students: 41						
А	В	C	D	Е	FX	
17.07	17.07 29.27 21.95 19.51 4.88 7.32					
Provides: prof.	RNDr. Gabriel S	Semanišin, PhD.	I	L		
Date of last modification: 23.02.2021						
Approved:						

University: P. J. Šafá	rik University in Ko	šice			
Faculty: Faculty of S	cience				
Course ID: ÚINF/ OP/14	Course name: Prof	essional experience			
Course type, scope a Course type: Practic Recommended cour Per week: Per stud Course method: pre	nd the method: ce rse-load (hours): y period: 2t esent				
Number of ECTS cr	edits: 2				
Recommended seme	ster/trimester of th	e course:			
Course level: 1.					
Prerequisities:					
Conditions for cours	e completion:				
Learning outcomes:					
Brief outline of the c	ourse:				
Recommended litera	ture:				
Course language:					
Notes:					
Course assessment Total number of asses	ssed students: 10				
	abs n				
100.0 0.0					
Provides: Mgr. Alexa	nder Szabari, PhD.,	Ing. Miron Kuzma, PhD.			
Date of last modifica	tion: 03.05.2015				
Approved:					

University: P. J. Šaf	árik University in Košice
Faculty: Faculty of	Science
Course ID: ÚINF/ JAC1/15	Course name: Programming language C
Course type, scope Course type: Pract Recommended cou Per week: 2 Per st Course method: pr	and the method: ice irse-load (hours): udy period: 28 resent
Number of ECTS c	redits: 2
Recommended sem	ester/trimester of the course: 5.
Course level: I., II.	
Prerequisities:	
Conditions for cour Practics attendance a Final project.	se completion: and activity. Home assigment
Learning outcomes Become skilled in la development in low	: anguage C and get knowledge of the theoretical concepts that are used in the -level software.
 Brief outline of the Installing and set running. Loops, conditions with `gcc` and settin Functions. Staticat Basic I/O function Dynamic memory arrays. Strings and f String manipulativ Working with bin Custom data type Dynamic data stru Additional opera Useful tricks and arrays. Function pointer 	course: ting up the development environment. Simple program in C, compiling and s. Introduction to arrays. Numeric functions from numeric library. Compiling ig up the warnings and hints. illy allocated arrays. Array gotchas in C. Makefiles for complex projects. ns. Functions with array parameters and specifics. y allocation as a mechanism for dynamic arrays. Strings as a special case of ile I/O. on principles and functions from standard library. ary files. s. Structs. actures. Linked lists. Stacks and operations with these structs. ations with dynamic data structures. Parameter passing with values and name. hints: passing parameters from operating system, exit codes. Multidimensional rs. Generic pointers. Unions.
Recommended liter 1. KERNIGHAN, B 2006. ISBN:802510 2. PRATA, Stephen. 9780321928429. 3. SEACORD, Robe Francisco United St	rature: rian W., Dennis M. RITCHIE. Programovací jazyk C. Brno: Computer Press, 897X. C Primer Plus. 6th Edition. Addison-Wesley Professional, 2014. ISBN ert C. Effective C: An Introduction to Professional C Programming. San tates: No Starch Press, 2020, ISBN 9781718501041

Course language: Slovak or English							
Notes:							
Course assessment Total number of assessed students: 218							
А	B C D E FX						
34.4	34.4 19.27 17.43 14.22 10.55 4.13						
Provides: RND	Provides: RNDr. PhDr. Peter Pisarčík, RNDr. Patrik Pekarčík						
Date of last modification: 12.07.2021							
Approved:							

Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Programming of robotic kits
PRS/15	

Course type, scope and the method: Course type: Practice Recommended course-load (hours):

Per week: 3 Per study period: 42

Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:

Assessment of individual work on computers for a number of sub-assignments - robotic miniproject.

Creating and presenting a programmed robotic model including documentation.

Learning outcomes:

1. To acquire an overview of robotic sets and robotic programming environments.

2. To acquire skills in constructing and programming robots in selected robotic programming environments.

Brief outline of the course:

Robotic set (Lego Mindstorms) - components, engines, sensors, basics of constructing of the mechanical parts of the model. Programming robotic models in languages NXT-G and NXC - branching statements, loops, blocks, events, parallel processes that work with sensors, datalogging, communication between several NXT bricks. Creating mini-project (eg, traffic lights, parking, dance creations, guitar, smart thermometer, measuring distance). Robotic competition, ideas for demanding projects. Creation and presentation of the final project - a programmed robot model (eg, navigate a maze, sports, paramedic) including documentation.

Recommended literature:

1. BUMGARDNER, J. (2007) The Origins of Mindstorms. Wired, 2007. http://www.wired.com/geekdad/2007/03/the_origins_of_/

2. Carnegie Mellon. Robotics Academy. http://www.education.rec.ri.cmu.edu/

3. KABÁTOVÁ, M. a kol. (2010) Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika: Didaktika robotických stavebníc. Bratislava : ŠPÚ, 2010. ISBN 978-80-8118-070-5

4. JAKEŠ, T. (2014) LEGO MINDSTORMS NXT - Robotické vzdělávání, ZČU v Plzni, 2014. https://lego.zcu.cz/web/

Course language:

Notes:

Course assessment Total number of assessed students: 49							
A B C D E FX							
53.06 22.45 12.24 2.04 0.0 10.2							
Provides: RNDr. Zuzana Bednárová, PhD.							
Date of last modification: 03.05.2015							
Approved:							
University: P. J. Ša	ărik Universit	y in Košice					
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Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Programming of web-pages
PSW1/06	

Course type, scope and the method: Course type: Practice Recommended course-load (hours):

Per week: 2 Per study period: 28

Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: (ÚINF/DBS1a/15 and leboÚINF/DBS/15),ÚINF/PAZ1a/15

Conditions for course completion:

50% of the marks from continuous assignments

Learning outcomes:

An overview of modern technologies for creating dynamic websites. Describing and applying the basic principles of creating dynamic web pages. Utilize client-side (JavaScript) and server-side (PHP) web programming technologies. Using relational databases (MySQL) to create application web pages. Know the security risks of dynamic websites and be able to eliminate them.

Brief outline of the course:

- 1. JavaScript introduction to JavaScript programming.
- 2. JavaScript communication with the user, validation of data in forms using JavaScript.
- 3. JavaScript introduction to using the jQuery library.
- 4. PHP introduction to PHP programming.
- 5. PHP data and control structures of the PHP language.
- 6. PHP communication with the user, validation of data in forms using PHP.
- 7. PHP object oriented problem solving in PHP language. File manipulation.
- 8. PHP User authentication (cookies, session).
- 9. MySQL introduction to working with MySQL database system.
- 10. MySQL Simple applications using the database for data storage and access.

11. Web application security - an introduction to web application security.

12. Web application security - the most common web application security problems and how to eliminate them.

Recommended literature:

BLUM, Richard. PHP, MySQL& JavaScript: All-in-One. Hoboken, New Jersey: John Wiley, 2018. ISBN 978-1-119-46838-7.

KROMANN, Frank M. Beginning PHP and MySQL: From Novice to Professional. 5. CA, USA: Apress, 2018. ISBN 978-1-4302-6043-1.

HUSEBY, Sverre H. Zranitelný kód. Brno: Computer Press, 2006, 207 s. ISBN 80-251-1180-6. SNYDER, Chris, Thomas MYER a Michael SOUTHWELL. Pro PHP Security: From Application Security Principles to the Implementation of XSS Defenses. 2. United States of America: Apress, 2010. ISBN 978-1-4302-3318-3.

Course language: Slovak language, knowle	dge of English languag	e is only necessary for rea	iding documentation.
Notes: Content prerequisite: WE	3di/15 Web and user int	erface design	
Course assessment Total number of assessed	students: 23		
abs	n	neabs	Z
65.22	34.78	0.0	0.0
Provides: PaedDr. Ján G	uniš, PhD.		
Date of last modification	a: 31.08.2021		
Approved:			

	COURSE INFORMATION LETTER
University: P. J. Šafár	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ PAZ1a/15	Course name: Programming, algorithms, and complexity
Course type, scope a Course type: Lectur Recommended cour Per week: 3 / 4 Per Course method: pre	nd the method: e / Practice rse-load (hours): study period: 42 / 56 esent
Number of ECTS cro	edits: 8
Recommended seme	ster/trimester of the course: 1.
Course level: I., II.	
Prerequisities:	
Conditions for cours Graded activities duri Final examination: pr Rules to pass the subj final project) and test defined limit of total	e completion: ing semester: assignments, small exams, midterm, final project. actical finalterm focused on a complex task. ect: Pass the minimal limit of points for category of homeworks (assignments, is (small exams, midterm). Get at least 42% from the finalterm and pass the points for all graded activities.
Learning outcomes: Get an ability to impl oriented programmin	ement basic Java programs and obtain essential knowledge related to object- g.
 Brief outline of the c 1. Introduction to Java objects using turtle gr 2. For-loops, local van conditions. 3. While-loop, return 4. Primitive and refer instance variables. 5. Array of primitive 6. Advanced array alg 7. Exceptions and exce 8. Reading from text 9. Creating classes, or overloading. 10. Inheritance and point 	ourse: a and JPAZ2 framework, first Eclipse project, interactive communication with raphics, repeating code in loops, notion of class, object, and method. riables, variable types, arithmetic expressions, random numbers, random walk, ing a value from a method, reference and reference variables, debugging. rence types, chars, String objects (including basic algorithms), mouse events, values and array of references, simple array algorithms. gorithms, two-dimensional array. ception handling, files and directories, writing to text files. files. encapsulation, getters and setters, constructors and their hierarchy, method olymorphism.
 Internatice and p Java Collections autoboxing, interface Access modifiers, static methods and va Creating and thro 	Framework, ArrayList class, wrapper classes for primitive types and s List, Set, Map and their implementations, methods equals and hashCode. , abstract classes and methods, creating and implementing interfaces, sorting, ariables. wing exceptions, checked and runtime exceptions, JavaDoc, Maven.
Recommended litera	ture:

Recommended literature:

1. ECKEL, Bruce. Thinking in Java. Fourth edition. Upper Saddle River, NJ: Prentice Hall, c[2006]. ISBN 978-01-318-7248-6.

2. PECINOVSKÝ, Rudolf. OOP: naučte se myslet a programovat objektově. Brno: Computer Press, 2010. ISBN 978-80-251-2126-9.

3. SIERRA, Kathy a Bert BATES. Head first Java. Vyd. 2. Sebastopol: O'Reilly, 2005. ISBN 978-05-960-0920-5.

Course language:

Slovak language, english language is required only to read Java API documentation.

Notes:

Course assessment

Total number of assessed students: 717

А	В	С	D	Е	FX
16.18	7.39	11.44	15.48	15.06	34.45

Provides: RNDr. Juraj Šebej, PhD., RNDr. Zuzana Bednárová, PhD., RNDr. Miroslav Opiela, PhD., Mgr. Antónia Matisová, Mgr. Zoltán Szoplák

Date of last modification: 31.08.2021

Approved:

University:	P. J.	Šafárik	University	in Košice
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Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Programming, algorithms, and complexity
PAZ1b/15	

Course type, scope and the method:

Course type: Lecture / Practice

Recommended course-load (hours):

Per week: 2 / 4 **Per study period:** 28 / 56

Course method: present

Number of ECTS credits: 7

Recommended semester/trimester of the course: 2.

Course level: I., II.

Prerequisities: ÚINF/PAZ1a/15

Conditions for course completion:

Graded activities during semester: assignments, small theoretical exams, practical and theoretical midterm.

Final examination: practical and theoretical finalterm.

Rules to pass the subject: Get at least 50% from theoretical activities (small exams, theoretical midterm and theoretical finalterm) and from practical activities (practical midterm and finalterm). Pass the defined limit of total points for all graded activities.

Learning outcomes:

To know essential algorithms, data structures, and methods used for efficient algorithms design. To understand time complexity analysis. To practice efficient implementation of algorithms. To recognize combinatorial and graph algorithms.

Brief outline of the course:

- 1. Recursion and fractals.
- 2. Binary search, basic sorting algorithms, time complexity analysis, O-notation.
- 3. Basic data structures and algorithms: linked list, stack, queue.
- 4. Trees and their applications.
- 5. Efficient sorting algorithms (QuickSort, MergeSort, HeapSort).
- 6. Backtracking.
- 7. Dynamic programming, divide and conquer strategy.
- 8. Unweighted graphs, graph traversal, graph topological sort.
- 9. Weighted graphs, the shortest path algorithms.
- 10. Minimum spanning tree, greedy algorithms.
- 11. Hashing, amortized time complexity, string-searching algorithms.

Recommended literature:

1. WRÓBLEWSKI, Piotr. Algoritmy: datové struktury a programovací techniky. Brno: Computer Press, 2004. ISBN 80-251-0343-9.

2. CORMEN, Thomas H. Introduction to algorithms. 3rd ed. Cambridge: MIT Press, c2009. ISBN 978-0-262-03384-8.

3. KLEINBERG, Jon a Éva TARDOS. Algorithm design. Thirteenth impression. Noida, India: Pearson, c2014. ISBN 9789332518643.

4. MAREŠ, Martin a Tomáš VALLA. Průvodce labyrintem algoritmů. Praha: CZ.NIC, z.s.p.o., 2017. CZ.NIC. ISBN 978-80-88168-19-5.

Course language:

Slovak language, literature is available in english and czech language.

Notes:

Course assessment Total number of assessed students: 1222 р .

А	В	С	D	Е	FX
13.75	7.53	9.9	19.31	21.52	27.99
Provides: RNDr Zuzana Bednárová PhD RNDr Jurai Šebei PhD RNDr Miroslav Opiela					

Т

Provides: RNDr. Zuzana Bednárová, PhD., RNDr. Juraj S PhD., Mgr. Antónia Matisová, Mgr. Gabriela Vozáriková Dr. juraj Sebej, PhD.,

Date of last modification: 31.08.2021

Approved:

University: P. J.	Šafárik	University	/ in	Košice
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Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Programming, algorithms, and complexity
PAZ1c/17	

Course type, scope and the method:

Course type: Lecture / Practice

Recommended course-load (hours): Per week: 2 / 3 **Per study period:** 28 / 42

Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 3.

Course level: I., II.

Prerequisities: ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15

Conditions for course completion:

Active attendance at seminars, creation of two team projects.

Learning outcomes:

Gain skills to design and implement complex application with three-layer architecture and wellknown design patterns. Ability to create REST server and simple Angular application with ability to communicate with the REST server.

Brief outline of the course:

1. Classes, methods and properties identification. Entities. Unit testing in JUnit.

2. Intorduction to JavaFx, FXML, Scene Builder, Controller.

3. Model-view-controller pattern, classes Observable and Property, model of models, persistent layer, entities and identifiers, CRUD repository in main memory, connection between GUI and persistent layer.

4. Interfaces for DAO objects, class relationships with static association. Pros and cons in hardwired associations. Implementing Factory design pattern as an abstraction of hardwired association. Enum. Implementation of database persistent layer, configuration od JDBCTemplate and RowMapper.

5. Inserting data by JDBCTemplate, Associations between classes. Cardinalities: 1:1, 1:M, 1:N. Design and realization in the code. Design of complex data model, ResultSetExtractor.

- 6. Business layer, three-layer architecture, modal windows, editing entities in JavaFx and MySQL.
- 7. Logging with default tools and with `slf4j` library. Logging best practices. Safe password storage.
- 8. Annotations, lambda expressions, generic classes

9. Spring Boot and REST services. Json format.

10. Angular - Installation, TypeScript, DOM model, components and their properties, events listeners in components.

11. Angular - components interaction, forms, input validation.

12. Angular - services, Observable, injection, communication with REST server via HTTP.

Recommended literature:

1. SIERRA, K., BATES, B.: Head First Java (2nd Edition), 2005

2. ECKEL, B.: Thinking in Java (4th Edition), 2006

3. Angular Docs, typescript. Dostupné na internete: https://angular.io/docs/ts/latest/

Course languag Slovak	ge:					
Notes:						
Course assessment Total number of assessed students: 343						
А	В	С	D	Е	FX	
32.65	17.78	16.62	15.45	13.12	4.37	
Provides: RND	r. Peter Gurský, I	PhD.				
Date of last modification: 09.07.2021						
Approved:						

University: P. J.	Šafárik Unive	rsity in Košice			
Faculty: Faculty	y of Science				
Course ID: ÚIN PRO1a/15	VF/ Course 1	name: Project I.			
Course type, sc Course type: I Recommended Per week: 4 Pe Course metho	ope and the m Practice I course-load (er study perioc d: present	ethod: hours): l: 56			
Number of EC	FS credits: 4				
Recommended	semester/trim	ester of the cours	e: 4.		
Course level: I.					
Prerequisities:	,				
Conditions for Activity in exe solving a specif	course comple rcises, elaborat ic problem. Up	tion: ion of home assign loading a software	gnments. Presen e work.	tation of the res	sults achieved in
Learning outco Acquire the wa problems of con	mes: by of working nputer systems	on a software wo administration in	ork, communicat all phases of the	ion in a softwa ir life cycle.	re team, solving
Brief outline of Work in a 2-4 n of a mentor from with git in comm	the course: nember team or n software com mand lines.	the development panies. Getting ac	, testing of a soft quainted with co	ware product un ntinuous integra	der the guidance tion and working
Recommended 1. https://www. 2. https://www. 3. Study literatu	literature: udemy.com/cou jenkins.io/doc/ ure tied to the se	urse/ Git & GitHul elected project (ac	o - The Complete	e Git & GitHub ient's recommen	dation)
Course languag Slovak or Engli	ge: sh				
Notes: Content prerequ advanced progr	iisities: amming skills				
Course assessm Total number of	ent f assessed stude	ents: 106			
А	В	С	D	E	FX
69.81	8.49	7.55	10.38	2.83	0.94
Provides: Mgr.	Alexander Szał	oari, PhD., RNDr.	Patrik Pekarčík		
Date of last mo	dification: 25.0	03.2021			
Approved:					

University: P. J. Šafá	irik Univers	ity in Košice			
Faculty: Faculty of S	Science				
Course ID: ÚINF/ PRO1b/15	Course na	ame: Project II.			
Course type, scope a Course type: Practi Recommended cou Per week: 4 Per stu Course method: pr	and the met ce rse-load (h 1dy period: esent	thod: ours): 56			
Number of ECTS cr	redits: 4				
Recommended seme	ester/trimes	ster of the cours	e: 5.		
Course level: I.					
Prerequisities:					
Conditions for cour Presentation of the Preparation of mater	se completi results achie ials for the p	on: eved in solving a promotion of the	a specific proble final work.	em. Uploading a	software work.
Learning outcomes: Acquire the way of y software team, solvin	working on ng problems	the software wor of computer syst	k with agile met ems administration	hodology, comm on in all phases of	unication in the f their life cycle.
Brief outline of the Work in a 4-5 memb of a mentor from sof in command lines. S	course: er team on t tware comp oftware dev	the development, anies. Improving elopment using A	testing of a soft with continuous Agile methodolog	ware product und integration and v gy.	ler the guidance vorking with git
Recommended liter 1. https://www.udem 2. https://www.jenki 3. Study literature tie 4. "What is Agile So	ature: hy.com/cour ns.io/doc/ ed to the sel- ftware Deve	se/ Git & GitHub ected project (acc elopment?". Agil	- The Complete cording to the cli e Alliance. 8 Jun	Git & GitHub ent's recommend le 2013. Retrieve	ation) d 4 April 2015.
Course language: Slovak or english					
Notes: Content prerequisities: advanced programming skills					
Course assessment Total number of assessed students: 70					
Α	В	C	D	E	FX
64.29	11.43	8.57	7.14	2.86	5.71
Provides: Mgr. Alex	ander Szaba	ari, PhD., RNDr.	Róbert Novotný,	PhD., RNDr. Pa	trik Pekarčík
Date of last modific	ation: 25.03	3.2021			

Approved:

University: P. J.	Šafárik Univers	sity in Košice			
Faculty: Faculty	of Science				
Course ID: ÚIN PRM1/15	F/ Course n	ame: Project man	nagement		
Course type, sco Course type: L Recommended Per week: 2 / 1 Course method	ope and the me ecture / Practice course-load (h Per study peri l: present	thod: e iours): iod: 28 / 14			
Number of ECT	S credits: 4				
Recommended s	semester/trime	ster of the cours	e: 1.		
Course level: I.					
Prerequisities:					
Conditions for c The ongoing eva final evaluation be included in th	course complet iluation consists is based on a wi be overall evaluation	ion: of the evaluation ritten and oral exa ation.	n of the sub-tasks am. The result o	s related to the profile of the ongoing eva	oject design. The aluation will also
Learning outcon Gain basic know evaluation. Acqu	mes: vledge and skill uire basic know	s related to project t	ct preparation, p eam manageme	project mplement nt and organization	ation and project on.
Brief outline of Introduction to Project specifica Short-term and I field of informat	the course: project manage tion. Decision r long-term proje tics.	ement. Project p naking. Commur ct management s	planning. Prepar nication. Work o strategies. Speci	ration of project rganization. Proj fic approaches fo	documentation. ect management. or projects in the
Recommended I 1. BERKUN, S. 2. Erik Larson a 3. PRINCE2. Av	literature: The Art Of Pro nd Clifford Gra valiable on inter	ject Managemen y : Project Manaş net: <http: td="" www<=""><td>t. O Reilly, 2005 gement: .prince2.com>.</td><th>5.</th><th></th></http:>	t. O Reilly, 2005 gement: .prince2.com>.	5.	
Course languag Slovak or englis	e: h				
Notes:	Notes:				
Course assessment Total number of assessed students: 86					
А	В	C	D	E	FX
30.23	26.74	23.26	8.14	5.81	5.81
Provides: Mgr. A	Alexander Szaba	ari, PhD., prof. R	NDr. Gabriel Se	emanišin, PhD.	
Date of last mod	lification: 03.0	3.2021			
Approved:					

University: P. J. Ša	afárik Univers	sity in Košice			
Faculty: Faculty o	f Science				
Course ID: ÚINF/ RPBI/20	Course na	ame: Resolving o	computer security	y incidents	
Course type, scop Course type: Prac Recommended co Per week: 3 Per s Course method:	e and the me ctice ourse-load (h study period: present	thod: nours): : 42			
Number of ECTS	credits: 3				
Recommended ser	nester/trime	ster of the cours	e: 6.		
Course level: I., II	•				
Prerequisities:					
Conditions for cou	irse complet	ion:			
Learning outcome	es:				
Brief outline of th	e course:				
Recommended lite	erature:				
Course language:					
Notes:					
Course assessmen Total number of as	t sessed studer	nts: 6			
A	В	C	D	Е	FX
100.0	0.0	0.0	0.0	0.0	0.0
Provides: RNDr. J	UDr. Pavol S	okol, PhD.	<u>I</u>	1	1
Date of last modif	ication: 08.02	2.2021			
Approved:					

University: P. J. Šafá	irik University in Košice						
Faculty: Faculty of S	Science						
Course ID: ÚTVŠ/ ÚTVŠ/CM/13	Course name: Seaside Aer	robic Exercise					
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: Per study period: 36s Course method: combined, present							
Number of ECTS cr	redits: 2						
Recommended seme	ester/trimester of the cours	e:					
Course level: I., II.							
Prerequisities:							
Conditions for cour Conditions for cours Attendance	se completion: e completion:						
Learning outcomes: Students will be pro- conditions actively a Students will acquire the aim to improve the	ovided an overview of pos and their skills in work and e practical experience in org he stay and to create positive	sibilities how to spend leisure time in seaside communication with clients will be improved. anising the cultural and art-oriented events, with experiences for visitors.					
 Brief outline of the course: Brief outline of the course: Basics of seaside aerobics Morning exercises Pilates and its application in seaside conditions Exercises for the spine Yoga basics Sport as a part of leisure time Application of projects of productive spending of leisure time for different age and social groups (children, young people, elderly) Application of seaside cultural and art-oriented activities in leisure time 							
Recommended literature:							
Course language:							
Notes:							
Course assessment Total number of assessed students: 41							
	abs	n					
	12.2	87.8					

Provides: Mgr. Agata Horbacz, PhD.

Date of last modification: 15.03.2019

Approved:

University: P. J.	Šafárik Univers	ity in Košice			
Faculty: Faculty	of Science				
Course ID: ÚIN BAPS/15	IF/ Course na	me: Security an	d administration	of computer syst	ems
Course type, sc Course type: Recommended Per week: Per Course method	ope and the met l course-load (h • study period: d: present	hod: ours):			
Number of ECT	FS credits: 4				
Recommended	semester/trimes	ster of the cours	e:		
Course level: I.					
Prerequisities: 1 leboÚINF/FAN/	ÚINF/KRS/15,(U 15),ÚINF/SKB1	ั้JINF/ADL1/15 ส /15	and leboÚINF/A	DW1/15),(ÚINF	/ARP1/15 and
Conditions for a	course completi	on:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	ge:				
Notes:					
Course assessm Total number of	ent fassessed studen	ts: 2			
A	В	С	D	Е	FX
0.0	50.0	0.0	0.0	50.0	0.0
Provides:					•
Date of last mo	dification: 09.04	.2018			
Approved:					

University: P. J.	Šafárik Univers	ity in Košice			
Faculty: Faculty	of Science				
Course ID: ÚIN BPD1/15	F/ Course na	me: Security of	computer system	is and data	
Course type, sco Course type: L Recommended Per week: 2 / 2 Course method	ope and the met ecture / Practice course-load (h Per study perio l: present	hod: ours): od: 28 / 28			
Number of ECI	'S credits: 5				
Recommended :	semester/trimes	ster of the course	e: 3., 5.		
Course level: I.,	II.				
Prerequisities:					
Conditions for a	course completi	on:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	e:				
Notes:					
Course assessme Total number of	ent assessed studen	ts: 36			
A	В	С	D	Е	FX
22.22	22.22	16.67	16.67	22.22	0.0
Provides: doc. R	NDr. Jozef Jirás	sek, PhD., RNDr.	Rastislav Krivo	š-Belluš, PhD.	
Date of last mod	lification: 07.07	.2021			
Approved:					

University: P. J.	Šafárik Univers	sity in Košice			
Faculty: Faculty	of Science				
Course ID: ÚIN SPS1/15	IF/ Course na	ame: Seminar in r	network progra	mming	
Course type, sc Course type: P Recommended Per week: 3 Pe Course method	ope and the met Practice I course-load (h er study period: d: present	thod: ours): 42			
Number of ECT	S credits: 3				
Recommended	semester/trimes	ster of the course	: 5.		
Course level: I.,	II.				
Prerequisities:					
Conditions for a	course completi	on:			
Learning outco To render currer	mes: nt technologies o	of programing in r	etwork distribu	uted environment.	
Brief outline of Basics of progr Procedure Calls ASP, JSP, Comp Model, XML, X Advanced level	amming the clie Server-side pro conent Object M SL, dynamic ex of programming	ent-server applica gramming, CGI, I Iodel, Corba, data tensions of HTMI g is expected.	tions, iterative PHP, basics of I abase connection L.	and concurrent s Perl and Python. S on's interfaces. D	servers, Remote Script languages, ocument Object
Recommended Internet sources	literature: and specificatio	ns.			
Course languag	je:				
Notes:					
Course assessm Total number of	ent assessed studen	ts: 92			
Α	В	С	D	E	FX
65.22	20.65	11.96	1.09	1.09	0.0
Provides: RND	: Rastislav Krive	oš-Belluš, PhD.			-
Date of last mo	dification: 03.05	5.2015			
Approved:					
L					

University: P. J. Ša	fárik Univers	ity in Košice			
Faculty: Faculty of	Science				
Course ID: ÚINF/ SPG1/15	Course na	me: Seminar on	computer grap	hics	
Course type, scope Course type: Prac Recommended co Per week: 2 Per so Course method: p	and the met tice urse-load (h tudy period: resent	hod: ours): 28			
Number of ECTS of	credits: 3				
Recommended sem	nester/trimes	ster of the course	e: 4., 6.		
Course level: I., II.					
Prerequisities: ÚIN	F/UGR1/15				
Conditions for cou	rse completi	on:			
Learning outcomes	5:				
Brief outline of the Seminar is connected presents actual theo algorithms of comp Knowledge from th	course: to the lecture retical and in uter graphics e lecture UG	e UGR Introduction nplementation pro- geometric mode R and good prog	on to computer oblems. Main g elling and reali rammers exper	graphics. In semi goal in interest is stic drawing of so ience are suppose	nar form students oriented to quick cenes. ed.
Recommended lite	rature:				
Course language:					
Notes:					
Course assessment Total number of ass	sessed studen	ts: 41			
A	В	С	D	E	FX
75.61	12.2	7.32	2.44	0.0	2.44
Provides: RNDr. Ra	astislav Krivo	oš-Belluš, PhD., o	doc. RNDr. Joz	ef Jirásek, PhD.	
Date of last modified	cation: 03.05	5.2015			-
Approved:					

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ OSS/15	Course name: Seminar to operation systems
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course: 3.
Course level: I.	
Prerequisities: ÚINF ePOS2a/15)	/PAZ1a/15,(ÚINF/ZLI/21 and leboÚINF/POS2/15 and leboÚINF/
Conditions for cours Develop two final pro	e completion: ojects: PowerShell script (Windows) or Shellscript (Linux)
Learning outcomes: To work with shells o	of Windowsu and GNU/Linux. Scripting in both platforms.
Brief outline of the c Block "Windows She PowerShell scripting Cmdlet as a fundame Cmdlet parameters at pipelines. Data model, classes and .NET platform. Developing complex programming in Pow Function and filters. Block "Linux Shell S Linux Shell Scripting Standard input and or Common filters for st Basic programming c Shell Expansions: ari Accessing informatic Creating complex and	ourse: Il Scripting" environment and basic concepts. ntal unit and its usage. nd documentation. Standard input and output. Pipes. Combining cmdlets via and objects. Object properties. Relation between PowerShell object model scripts in the PowerShell ISE environment. Fundamentals of procedural erShell. Providers: WMI, registers. Developing custom cmdlets in C#. cripting" :: Bash and fundamental concepts. itput. Pipes and I/O redirection. andard I/O. onstructs: conditions and loops. Exit codes as a basic for procedural elements thmetic environment, subshells, variables. n structures and Linux filesystem. d secure scripts best practices.
Recommended litera [1] Bruce Payette, W Manning 2011 [2] Richard Siddaway	ture: indows PowerShell in Action, Second Edition, ISBN 9781935182139, , PowerShell in Practice, ISBN: 9781935182009, Manning 2010

[3] Shell Command Language. In: The Open Group Base Specification Issue 6. [online] Available online http://pubs.opengroup.org/onlinepubs/009695399/utilities/xcu_chap02.html
[4] Steve Parker, Shell Scripting: Expert Recipes for Linux, Bash and more, ISBN: 978-1-1181-6633-8, Wrox 2011

9/0-1-1101-00	555-8, WIOX 2011				
Course langua English	ige:				
Notes:					
Course assess Total number of	ment of assessed studen	ts: 66			
А	В	С	D	Е	FX
66.67	21.21	3.03	3.03	0.0	6.06
Provides: RNI	Dr. Róbert Novotn	ý, PhD.			
Date of last me	odification: 03.05	.2015			
Approved:					

University: P. J.	. Šafárik Univers	ity in Košice			
Faculty: Faculty	y of Science				
Course ID: ÚIN PRIS/15	NF/ Course na	ame: Software an	nd information s	system	
Course type, sc Course type: Recommended Per week: Per Course metho	ope and the met d course-load (h r study period: d: present	thod: ours):			
Number of EC	ΓS credits: 4				
Recommended	semester/trimes	ster of the cours	e:		
Course level: I.					
Prerequisities: SWI1b/15	ÚINF/ASU1/15,	(ÚINF/TVP1/15	and leboÚINF/	TVP1/21),ÚINF/	PMO1/15,ÚINF/
Conditions for	course completi	on:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	ge:				
Notes:					
Course assessm Total number of	ent f assessed studen	ts: 34			
А	В	С	D	E	FX
26.47	20.59	35.29	8.82	8.82	0.0
Provides:			•		
Date of last mo	dification: 23.04	4.2021			
Approved:					

University: P. J. Šafărik University in Košice Faculty: Faculty of Science Course ID: ÚINF/ Course name: Software engineering SWIIa/15 Course name: Software engineering Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present Vumber of ECTS credits: 2 Recommended semester/trimester of the course: 4. Course level: 1. Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15 Conditions for course completion: Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: System, subsystem, software system. Software processes. Introduction to project management. Recommended literature: 1. 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering. 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course language: Notes: Course assessment Total number of assessed students; 313 A B C D E FX A B C D E FX 1.28 Prov						
Faculty: Faculty of Science Course ID: ÚINF/ Course name: Software engineering SWI1a/15 Course type, scope and the method: Course type, scope and the method: Course type, scope and the method: Course type; Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present Number of ECTS credits: 2 Recommended semester/trimester of the course: 4. Course level: 1. Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15 Conditions for course completion: Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: System, subsystem, software system. Software processes. Introduction to project management. Recommended literature: I. BERKUN, S. The Art Of Project Management. O Reilly, 2005. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. System, subsystem engineering 1,2,3. Springer-Verlag Berlin, 2006. <td>University: P. J.</td> <td>Šafárik Univers</td> <td>sity in Košice</td> <td></td> <td></td> <td></td>	University: P. J.	Šafárik Univers	sity in Košice			
Course ID: ÚINF/ Course name: Software engineering SWI1a/15 Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present Number of ECTS credits: 2 Recommended semester/trimester of the course: 4. Course level: I. Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15 Conditions for course completion: Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: Software processes. Introduction to project management. Requirements gathering. Software modeling. Software architectures. Software development methodologies. Verification and validation. Resource management. Recommended literature: 1. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Students: 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanisin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Appr	Faculty: Faculty	of Science				
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present Number of ECTS credits: 2 Recommended semester/trimester of the course: 4. Course level: 1. Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15 Conditions for course completion: Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: System, subsystem, software system. Software processes. Introduction to project management. Recommended literature: 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course language: Notes: Course assessment Total number of assessed students: 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modifi	Course ID: ÚIN SWI1a/15	F/ Course n	ame: Software en	gineering		
Number of ECTS credits: 2 Recommended semester/trimester of the course: 4. Course level: 1. Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15 Conditions for course completion: Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: System, subsystem, software system. Software processes. Introduction to project management. Requirements gathering. Software modelilng. Software architectures. Software development methodologies. Verification and validation. Resource management. Recommended literature: 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course language: Notes: Course assessment Total number of assessed students: 313 A B C D E FX 18,21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Approved: Veroved: Veroved:	Course type, sco Course type: Pr Recommended Per week: 2 Per Course method	pe and the me actice course-load (h r study period : present	thod: ours): 28			
Recommended semester/trimester of the course: 4. Course level: I. Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15 Conditions for course completion: Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: System, software system. Software processes. Introduction to project management. Requirements gathering. Software modeling. Software architectures. Software development methodologies. Verification and validation. Resource management. Recommended literature: 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course assessment Total number of assessed students: 313 A A A A A C D FX A B C D	Number of ECT	S credits: 2				
Course level: I. Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15 Conditions for course completion: Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: System, subsystem, software system. Software processes. Introduction to project management. Requirements gathering. Software modeling. Software architectures. Software development methodologies. Verification and validation. Resource management. Recommended literature: 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course language: Notes: Course assessment Total number of assessed students: 313 A B C A B C 18.21 23.0 20.13 17.57 18.21 23.0 20.13 17.57 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Approved:	Recommended s	emester/trime	ster of the course	e: 4.		
Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15 Conditions for course completion: Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: System, subsystem, software system. Software processes. Introduction to project management. Requirements gathering. Software modeling. Software architectures. Software development methodologies. Verification and validation. Resource management. Recommended literature: 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course language: Notes: Course assessment Total number of assessed students: 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Approved: Vapproved: Vapproved:	Course level: I.					
Conditions for course completion: Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: System, subsystem, software system. Software processes. Introduction to project management. Requirements gathering. Software modeling. Software architectures. Software development methodologies. Verification and validation. Resource management. Recommended literature: 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course language: Notes: Course assessment Total number of assessed students: 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Approved: Vapproved: Vapproved:	Prerequisities: Ú	JINF/DBS1a/15	and leboÚINF/E	DBdi/15		
Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: System, subsystem, software system. Software processes. Introduction to project management. Requirements gathering. Software modeling. Software architectures. Software development methodologies. Verification and validation. Resource management. Recommended literature: 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course language: Notes: Course assessment Total number of assessed students: 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Approved: Value Scalas Scala	Conditions for c	ourse complet	ion:			
System, software system, software processes, introduction to project management. Requirements gathering. Software modeliling. Software architectures. Software development methodologies. Verification and validation. Resource management. Recommended literature: 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course language: Notes: Course assessment Total number of assessed students: 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015	Learning outcom To provide inform products. Brief outline of t	nes: mation concern the course:	ing the principal		d to the developm	nent of software
Recommended literature: 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course language: Notes: Course assessment Total number of assessed students: 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015	Requirements ga methodologies. V	athering. Software s	vare modelilng. validation. Resou	Software archi	tectures. Softwar nt.	re development
Course language: Notes: Course assessment Total number of assessed students: 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Approved:	Recommended I 1. BERKUN, S. 2. BJORNER, D 3. SOMMERVIL	iterature: The Art Of Pro . Software engi .LE, I. Software	ject Management. neering 1,2,3. Spr e Engineering. Ac	O Reilly, 2005 inger-Verlag Be ldison-Wesley, 2	erlin, 2006. 2007.	
Notes: Course assessment Total number of assessed students: 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Approved:	Course language	2:				
Course assessment Total number of assessed students: 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Date of last modification: 03.05.2015	Notes:					
ABCDEFX18.2123.020.1317.5719.811.28Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.Date of last modification: 03.05.2015Approved:	Course assessme Total number of	e nt assessed studer	ats: 313			
18.2123.020.1317.5719.811.28Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.Date of last modification: 03.05.2015Approved:	Α	В	С	D	Е	FX
Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Approved:	18.21	23.0	20.13	17.57	19.81	1.28
Date of last modification: 03.05.2015 Approved:	Provides: prof. R	NDr. Gabriel S	emanišin, PhD., I	Mgr. Alexander	Szabari, PhD.	
Approved:	Date of last mod	ification: 03.03	5.2015			
	Approved:					

University. 1. J. Salarik University in Rosiec							
Faculty: Faculty of Science							
Course ID: ÚINF/ Course name: Software engineering							
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 3 Per study period: 42 Course method: present							
Number of ECTS credits: 3							
Recommended semester/trimester of the course: 5.							
Course level: 1.							
Prerequisities: UINF/SWI1a/15							
Conditions for course completion:							
Learning outcomes: To learn principles and to developed fundamental skills concerning software modelling, development and implementation.							
Brief outline of the course: Software modelling in UML - the syntax and the semantics of UML diagrams. Foundation of Model Driven Architecture. Selected aspects of project management. Selected legal aspects of SW engineering. Pattern design.							
Recommended literature:							
Course language:							
Notes:							
Course assessment Total number of assessed students: 255							
A B C D E FX							
45.88 20.0 11.76 7.84 13.33 1.18							
Provides: Mgr. Alexander Szabari, PhD., prof. RNDr. Gabriel Semanišin, PhD.							
Date of last modification: 03.05.2015							
Approved:							

University: P. J. Šafá	rik University in Košice					
Faculty: Faculty of S	cience					
Course ID: ÚINF/Course name: Special seminar to bachelor thesisBZP1a/15						
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent					
Number of ECTS cro	edits: 2					
Recommended seme	ster/trimester of the course: 5.					
Course level: I.						
Prerequisities: ÚINF	/PBS/15					
Conditions for cours Update of the bachele selected in the bache scientific article of 5 supervisor.	te completion: For thesis website. Presentation of the current state of knowledge for the topic For's thesis. Presentation of the first results of bachelor thesis. Preparing of pages length in the required structure. Approval of the article by the thesis					
Learning outcomes: Basic knowledge abo aspects of the bachelo creating the database of the current state of preparation of a scien	but the procedure and writing of the bachelor's thesis, standards and formal or's thesis, the creation of bibliographic references and their citations, tools for of used literature. Basic knowledge of the content and form of presentation of knowledge for the topic of the bachelor's thesis. Basic knowledge about the attific article.					

Brief outline of the course:

- 1. Procedure for writing the bachelor thesis.
- 2. Standards and formal aspects of the bachelor thesis.
- 3. Rules of writing and editing documents STN 01 6910.
- 4. Documentation, Numbering of sections and subsections of written documents STN ISO 2145.
- 5. Information and documentation STN ISO 690.
- 6. Instructions for creating bibliographic references to information sources and their citation.
- 7. Selected typographic principles.
- 8. Professional resources on the Internet.
- 9. Principles of correct citation.
- 10. Tools for creating your own database of used literature.
- 11. Annotation of read literature, creation of searches.
- 12. Presentation of selected topics of bachelor theses.
- 13. Presentation of selected topics of bachelor theses.

Recommended literature:

1. STN 01 6910. Rules of writing and editing documents. 2011.

2. STN ISO 2145. Documentation. Numbering of sections and subsections of written documents. 1997.

3. STN ISO 690. Information and documentation. Instructions for creating bibliographic references to information sources and their citation. 2012

4. KATUŠČÁK, Dušan: How to write final and qualification theses. Enigma, 2013

5. Scientific literature related to the topic of the final thesis according to the recommendation of the thesis supervisor.

Course language: Slovak or English						
Notes:						
Course assessment Total number of assessed students	s: 130					
abs	abs n neabs					
96.15	96.15 3.85 0.0					
Provides: RNDr. L'ubomír Antoni	, PhD.					
Date of last modification: 26.08.2021						
Approved:						

Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Special seminar to bachelor thesis
BZP1b/15	

Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28

Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚINF/BZP1a/15 and leboÚINF/SZPa/22

Conditions for course completion:

Update of the bachelor thesis website. Presentation of the obtained results of the bachelor's thesis. Preparation of at least a 10-page scientific article for the topic chosen in the bachelor's thesis in the required structure and its approval by the thesis supervisor. Creating a promotional image (poster) about the results of the bachelor's thesis.

Learning outcomes:

Basic knowledge of the central register of final theses, licenses and copyrights, content and form of presentation of the overall results achieved in the bachelor's thesis. Basic knowledge about the preparation of a scientific article and presentation of the achieved results for popularization purposes.

Brief outline of the course:

- 1. Central register of final theses.
- 2. Licenses and Copyrights.
- 3. Directive on basic requirements for final theses at UPJŠ in Košice.
- 4. The most common mistakes in writing a final thesis.
- 5. Evaluation criteria and examples of assessments.
- 6. Preparation of a presentation for the defense of the final thesis.
- 7. Preparation of a scientific article.
- 8. Preparation of a presentation for the defense of the final thesis.
- 9. Preparation of a scientific article.
- 10. Procedure for submitting the final thesis.
- 11. Popularization of bachelor thesis results.
- 12. Presentations of the results of bachelor theses.
- 13. Presentations of bachelor thesis results.

Recommended literature:

1. STN 01 6910. Rules of writing and editing documents. 2011.

2. STN ISO 2145. Documentation. Numbering of sections and subsections of written documents. 1997.

3. STN ISO 690. Information and documentation. Instructions for creating bibliographic references to information sources and their citation. 2012

4. KATUŠČÁK, Dušan. How to write final and qua5. Scientific literature related to the topic of the fina the thesis supervisor.	lification theses. Enigma, 2013 1 thesis according to the recommendation of
Course language:	
Slovak or English	
Notes:	
Course assessment Total number of assessed students: 124	
abs	n
99.19	0.81
Provides: RNDr. Ľubomír Antoni, PhD.	
Date of last modification: 26.08.2021	
Approved:	

University: P. J. Šafárik University in Košice								
Faculty: Faculty of Science								
Course ID: ÚINF/ SSBa/20	a/20 Course name: Specialized seminar to bachelor thesis							
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present							
Number of ECTS cr	edits: 2							
Recommended seme	ster/trimester of the cours	e: 5.						
Course level: I.								
Prerequisities:								
Conditions for cours Presentation of relate discussions to theses	e completion: ed works to student's thesis, of other students.	presentation of original partial results of thesis,						
Learning outcomes: To study new knowle current state in the ar	edges in the related area of eau sing conference proceed	computer science in the seminar form. To follow lings and specialized journals.						
Brief outline of the c Seminar is oriented to	ourse: an individual work with st	udents which related bachelor or diploma theses.						
Recommended litera Special and research supervisor.	iture: literature connected to bach	elor thesis according to recommendations of						
Course language: Slovak or english								
Notes:								
Course assessment Total number of asses	ssed students: 13							
	abs n							
100.0 0.0								
Provides: RNDr. Ľubomír Antoni, PhD., MSc. Terézia Mézešová, RNDr. Zuzana Bednárová, PhD., prof. RNDr. Gabriel Semanišin, PhD., RNDr. JUDr. Pavol Sokol, PhD., doc. RNDr. Ondrej Krídlo, PhD., RNDr. Rastislav Krivoš-Belluš, PhD., RNDr. Juraj Šebej, PhD., RNDr. Peter Gurský, PhD.								
Date of last modifica	Date of last modification: 09.07.2021							
Approved:								

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: ÚINF/ SSBb/20	ourse ID: ÚINF/Course name: Specialized seminar to bachelor thesisSBb/20						
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent						
Number of ECTS cro	edits: 2						
Recommended seme	ster/trimester of the cours	e: 6.					
Course level: I.							
Prerequisities:							
Conditions for cours Presentation of relate discussions to theses	e completion: ed works to student's thesis, of other students.	presentation of original partial results of thesis,					
Learning outcomes: To study new knowle current state in the ar	edges in the related area of one area of one of the second s	computer science in the seminar form. To follow lings and specialized journals.					
Brief outline of the c Seminar is oriented to	ourse: an individual work with st	udents which related bachelor or diploma theses.					
Recommended litera Special and research supervisor.	ture: literature connected to bach	elor thesis according to recommendations of					
Course language: Slovak or english							
Notes:							
Course assessment Total number of asses	ssed students: 15						
	abs n						
100.0 0.0							
Provides: RNDr. Ľub PhD., prof. RNDr. Ga Krídlo, PhD., RNDr. J PhD.	omír Antoni, PhD., MSc. Te briel Semanišin, PhD., RNE Rastislav Krivoš-Belluš, PhI	erézia Mézešová, RNDr. Zuzana Bednárová, Dr. JUDr. Pavol Sokol, PhD., doc. RNDr. Ondrej D., RNDr. Juraj Šebej, PhD., RNDr. Peter Gurský,					
Date of last modifica	tion: 09.07.2021						
Approved:							

University: P. J. Šafá	rik University in Košice					
Faculty: Faculty of S	cience					
Course ID: ÚTVŠ/ TVa/11Course name: Sports Activities I.						
Course type, scope a Course type: Practic Recommended cou Per week: 2 Per stu Course method: co	and the method: ce rse-load (hours): idy period: 28 mbined, present					
Number of ECTS cr	edits: 2					
Recommended seme	ester/trimester of the course: 1.					
Course level: I., I.II.,	, II.					
Prerequisities:						
Conditions for cours Min. 80% of active p	se completion: participation in classes.					
Learning outcomes: Sports activities in all They have a great in enables students to s improve.	I their forms prepare university students for their professional and personal life. npact on physical fitness and performance. Specialization in sports activities strengthen their relationship towards the selected sport in which they also					
Brief outline of the c Brief outline of the c Within the optional s University provides badminton, body forr indoor football, S-M In the first two seme and particularities of physical condition, c Last but not least, the means of a special pr	course: ourse: subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik for students the following sports activities: aerobics, aikido, basketball, n, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, systems, step aerobics, table tennis, tennis, volleyball and chess. esters of the first level of education students will master basic characteristics individual sports, motor skills, game activities, they will improve level of their coordination abilities, physical performance, and motor performance fitness. e important role of sports activities is to eliminate swimming illiteracy and by pagram of medical physical education to influence and mitigate unfitness.					

In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.

Recommended literature:

Course language:

Notes:

Course assessment Total number of assessed students: 12859								
abs abs-A abs-B abs-C abs-D abs-E n neabs								
87.01	87.01 0.08 0.0 0.0 0.0 0.04 8.1 4.77							
Provides: Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Marcel Čurgali, Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Bc. Richard Melichar, Mgr. Petra Tomková, PhD.								
Date of last modification: 13.05.2021								
Approved:								

University: P J Šafái	rik University i	n Košice						
Faculty: Faculty of Science								
Course ID: ÚTVŠ/ TVb/11	Course name	: Sports Acti	vities II.					
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: combined, present								
Number of ECTS cro	edits: 2							
Recommended semes	ster/trimester	of the cours	e: 2.					
Course level: I., I.II.,	II.							
Prerequisities:								
Conditions for cours active participation in	e completion: classes - min.	80%.						
Learning outcomes: Sports activities in all They have a great im enables students to s improve.	their forms pre pact on physic trengthen their	pare universi al fitness and r relationship	ty students for d performand to towards the	or their profes ce. Specializa e selected sp	ssional and p ation in spor port in whic	ersonal life. ts activities h they also		
Brief outline of the c Within the optional s University provides badminton, body form indoor football, S-M In the first two semes and particularities of i physical condition, c Last but not least, the means of a special pro In addition to these s physical education tra the premises of the fac	ourse: ubject, the Inst for students t n, bouldering, f systems, step a sters of the firs ndividual sport cordination abi important role ogram of medic sports, the Inst inings with an a culty or Univers	itute of Phys he following loorball, yog erobics, table it level of ed is, motor skil ilities, physic of sports act cal physical e itute offers f attractive pro sity or compe	ical Education g sports action a, power yog e tennis, tenno ucation stude ls, game active cal performant civities is to en- education to it for those who gram and org titions with n	on and Sport vities: aerob a, pilates, sw is, volleybal ents will mas vities, they w nce, and more liminate swi influence and o are interest anises variou ational or int	s of Pavol Jo bics, aikido, imming, bod l and chess. ster basic cha ill improve le tor performa mming illiter d mitigate un ted winter a us competitio ternational pa	bzef Šafárik basketball, ly-building, aracteristics evel of their nce fitness. racy and by fitness. nd summer ns, either at articipation.		
Recommended literature:								
Course language:								
Notes:								
Course assessment Total number of assessed students: 11675								
abs abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs		
84.52 0.56	0.02	0.0	0.0	0.05	10.63	4.22		

Provides: Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Marcel Čurgali, Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Bc. Richard Melichar, Mgr. Petra Tomková, PhD.

Date of last modification: 13.05.2021

Approved:

University:	P. J. Šafárik	University i	n Košice					
Faculty: Faculty of Science								
Course ID: TVc/11	Course ID: ÚTVŠ/ Course name: Sports Activities III.							
Course type Course type Recommen Per week: Course me	Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: combined, present							
Number of	ECTS cred	its: 2						
Recommen	ded semeste	er/trimester	of the cours	e: 3.				
Course leve	l: I., I.II., II.							
Prerequisiti	ies:							
Conditions min. 80% o	for course o f active part	completion: icipation in c	lasses					
Sports activ They have a enables stud improve.	Learning outcomes: Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.							
Brief outlin Within the o University badminton, indoor footh In the first and particul physical con Last but not means of a s In addition physical edu the premises	e of the cou optional sub provides fo body form, l ball, S-M system two semeste arities of ind ndition, coo t least, the in special prog to these spo cation train s of the facul	irse: ject, the Inst r students the bouldering, f stems, step a ers of the firs lividual sport rdination abi nportant role ram of medic orts, the Inst ings with an a ty or Univers	itute of Phys he following loorball, yog erobics, table t level of edu s, motor skill lities, physic of sports act cal physical e itute offers f attractive pro sity or compe	ical Education g sports acti- a, power yog e tennis, tenn- ucation stude ls, game activ- cal performan- ivities is to e education to in for those who gram and org titions with n	on and Sport vities: aerob a, pilates, sw is, volleybal ents will mas vities, they w nce, and mo eliminate swi influence and o are interes canises variou ational or int	s of Pavol Jo pics, aikido, rimming, boo l and chess. ster basic cha ill improve lo tor performa mming illite d mitigate un ted winter a us competition ternational pa	ozef Šafárik basketball, ly-building, aracteristics evel of their nce fitness. racy and by fitness. nd summer ns, either at articipation.	
Recommended literature:								
Course language:								
Notes:								
Course assessment Total number of assessed students: 7873								
abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs	
88.8	0.05	0.01	0.0	0.0	0.03	4.08	7.04	

Provides: Mgr. Marcel Čurgali, Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Bc. Richard Melichar, Mgr. Petra Tomková, PhD.

Date of last modification: 13.05.2021

Approved:
University: P. J. Šafárik University in Košice									
Faculty: Facul	Faculty: Faculty of Science								
Course ID: Ú' TVd/11	TVŠ/ Co	ourse name:	: Sports Acti	vities IV.					
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: combined, present									
Number of EC	CTS credi	ts: 2							
Recommende	ed semeste	r/trimester	of the cours	e: 4.					
Course level:	I., I.II., II.								
Prerequisities	s:								
Conditions for min. 80% of a	r course c active parti	ompletion: cipation in c	lasses						
Learning outcomes: Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.									
Brief outline of the course: Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.									
Recommended literature:									
Course language:									
Notes:									
Course assess Total number	sment of assesse	d students: 5	125						
abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs		
83.14	0.31	0.04	0.0	0.0	0.0	7.75	8.76		

Provides: Mgr. Marcel Čurgali, Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Bc. Richard Melichar, Mgr. Petra Tomková, PhD.

Date of last modification: 13.05.2021

Approved:

University: P. J.	Šafárik Univers	sity in Košice					
Faculty: Faculty	of Science						
Course ID: ÚFV MSU/07	ID: ÚFV/ Course name: Statistical Methods of Data Analysis 7						
Course type, sco Course type: L Recommended Per week: 2 / 1 Course method Number of ECT	ope and the me ecture / Practice course-load (h Per study peri l: present CS credits: 4	thod: cours): cod: 28 / 14					
Recommended	semester/trime	ster of the cours	e: 3.				
Course level: I.							
Prerequisities:							
Conditions for c Exam	course complet	ion:					
Learning outcom Introduction to p	mes: probability theor	ry and mathematic	cal statistics.				
Brief outline of General introduc	the course: ction to theory c	of probability, rand	dom processes a	and mathematical	statistics.		
Recommended 1) L. Lyons, Sta 2) L. Lyons, A F 3) J.R. Taylor, A Measurements, I	literature: tistics for Nucle ractical Guide t In Introduction University Scien	ar and Particle Ph to Data Analysis f to Error Analysis: nce Books, 1997.	ysics, CUP, 198 or Physical Scie The Study of U	39. ence Students, CU Jncertainties in Ph	IP, 1991. aysical		
Course languag	e:						
Notes:							
Course assessme Total number of	ent assessed studer	nts: 85					
A	В	C	D	Е	FX		
20.0	12.94	7.06	7.06	52.94	0.0		
Provides: doc. R	NDr. Adela Kra	avčáková, PhD.		·			
Date of last mod	lification: 03.0	5.2015					
Approved:							
L	·						

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	y of Science						
Course ID: ÚIN SXM1/15	NF/ Course name: Structure formats and representation of data						
Course type, sc Course type: F Recommended Per week: 2 Pe Course metho	ope and the met Practice I course-load (h er study period: d: present	thod: ours): 28					
Number of EC	FS credits: 2						
Recommended	semester/trimes	ster of the cours	e: 3.				
Course level: I.							
Prerequisities:							
Conditions for Evaluation of pa Evaluation of m	course completi artial assignment aultiple assignme	on: s within larger punts correspondin	roject. g to learning blo	ocks.			
Learning outco Become ackno semistructured	mes: wledged with data. Acquire pro	theoretical conc ogramming skills	epts and meth with implement	odologies with tations of these co	structured and oncepts.		
Brief outline of Representation parsers: DOM, S Schema. Addres for semistructur (YAML), JAXE	the course: of semi-structur SAX, StAX. Java ssing in XML: X ed data: JSON, Y B (XML).	ed data in XML a API of XML pa Path. Transform AML. API for da	, valid and wel rsers. Schemas : ations of XML o ta binding in Jav	l-formed XML de for XML documen documents: XSLT va: Jackson (JSON	ocument. XML nts: DTD, XML ?. Other formats I), SnakeYAML		
Recommended 1. Eliotte "Rust 2. Grigoris Anto 2008. ISBN 978 3. Michaek Kay 978-076456909	literature: y" Harold. XML oniou, Frank Van 8-0262012423. 7. XSLT 2.0 Prog	Bible, Gold Edit Harmelen. A Se rammer's Refere	tion. Wiley, 200 emantic Web Pri nce, 3rd Edition	1. ISBN 978-0764 mer, Second Editi . Wrox, 2004. ISE	548192. on. MIT Press, BN:		
Course languag	ge:						
Notes:							
Course assessm Total number of	ent f assessed studen	ts: 73					
А	В	С	D	Е	FX		
32.88	21.92	20.55	13.7	10.96	0.0		
Provides: Mgr.	Alexander Szaba	ri, PhD.	l	<u> </u>			
Date of last mo	dification: 01.06	5.2015					

Approved:

University: P. J	. Šafárik Univers	ity in Košice						
Faculty: Facult	y of Science							
Course ID: ÚIN SVK1/15	Course ID: ÚINF/ Course name: Student scientific conference SVK1/15							
Course type, sc Course type: Recommended Per week: Per Course metho	cope and the met d course-load (h r study period: d: present	thod: ours):						
Number of EC	IS credits: 4		_					
Recommended	semester/trimes	ster of the cours	e: 6.					
Course level: I.	, II.							
Prerequisities:								
Conditions for	course completi	on:						
Learning outco	omes:							
Brief outline of	the course:							
Recommended	literature:							
Course languag	ge:							
Notes:								
Course assessm Total number of	nent f assessed studen	ts: 182						
А	В	С	D	Е	FX			
100.0 0.0 0.0 0.0 0.0								
Provides:								
Date of last modification: 03.05.2015								
Approved:								

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚTVŠ/ LKSp/13	Course name: Summer Course-Rafting of TISA River
Course type, scope a Course type: Practic Recommended cour Per week: Per stud Course method: pre	nd the method: ce rse-load (hours): y period: 36s esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course:
Course level: I., II.	
Prerequisities:	
Conditions for course Conditions for course Attendance Final assessment: Ra	e completion: e completion: ft control on the waterway (attended/not attended)
Learning outcomes: Learning outcomes: Students have knowled	edge of rafts (canoe) and their control on waterway.
Brief outline of the c Brief outline of the c 1. Assessment of diff 2. Safety rules for raf 3. Setting up a crew 4. Practical skills trai 5. Canoe lifting and c 6. Putting the canoe i 7. Getting in the canoe 8. Exiting the canoe o 10. Steering a) The pry stroke (on b) The draw stroke 11. Capsizing 12. Commands	ourse: ourse: iculty of waterways iting ning using an empty canoe carrying n the water without a shore contact be out of the water fast waterways)
Recommended litera	iture:
Course language:	
Notes:	

Course assessment Total number of assessed students: 153					
abs n					
45.75	54.25				
Provides: Mgr. Dávid Kaško, PhD.					
Date of last modification: 18.03.2019					
Approved:					

University: P. J. Šafár	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚTVŠ/ KP/12	Course name: Survival Course
Course type, scope a Course type: Practic Recommended cour Per week: Per stud Course method: cor	nd the method: ce rse-load (hours): y period: 36s mbined, present
Number of ECTS cro	edits: 2
Recommended seme	ster/trimester of the course:
Course level: I., II.	
Prerequisities:	
Conditions for cours Conditions for course Attendance Final assessment: cor	e completion: completion: ntinuous fulfilment of all tasks within the course
Learning outcomes: Learning outcomes: Students will be fan conditions as they wi and demanding situa course develops team require overcoming o	niliarized with principles of safe stay and movement in extreme natural ll obtain theoretical knowledge and practical skills to solve the extraordinary tions connected with survival and minimization of damage to health. The n work and students will learn how to manage and face the situations that of obstacles.
 Brief outline of the c Brief outline of the cc Lectures: Principles of behave Preparation and lead Objective and subjic Principles of hygic Exercises: Movement in terrat Preparation of imp Water treatment and 	ourse: burse: viour and safety for movement and stay in unknown mountains adership of tour ective danger in mountains ne and prevention of damage to health in extreme conditions in, orientation and navigation in terrain (compasses, GPS) rovised overnight stay d food preparation.
Recommended litera	ture:
Course language:	
Notes:	

Course assessment Total number of assessed students: 393					
abs n					
44.53	55.47				
Provides: MUDr. Peter Dombrovský, Mgr. Ladis	lav Kručanica, PhD.				
Date of last modification: 15.03.2019					
Approved:					

University: P. J.	. Šafárik Univ	ersity in Košice					
Faculty: Facult	y of Science						
Course ID: ÚIN SLO1a/15	VF/ Course	e name: Symbolic l	ogic				
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present							
Number of EC	FS credits: 5						
Recommended	semester/tri	nester of the cours	se: 4.				
Course level: I.	, II.						
Prerequisities:							
Conditions for	course comp	letion:					
Learning outco To understand provability, sati	mes: basic notior sfiability, terr	s of sentence and n, formula.	predicate logic	e - sentence, set	ntence scheme,		
Brief outline of Predicate logic Interpretation, t	the course: – logic langua ruth, model. (age, syntax and sem Correctness of the p	antics, term, forr redicate logic.	nula. Axioms, pro	oof, provability.		
Recommended literature: GOLDSTERN M., JUDAH H.: The Incompleteness Phenomenon, A New Course in Mathematical Logic, A K Peters, Wellesley, Massachusetts, 1995 http://cs.ics.upjs.sk/~krajci/skola/vyucba/ucebneTexty/logika/logika.pdf							
Course languag	ge:						
Notes:							
Course assessment Total number of assessed students: 405							
А	В	С	D	Е	FX		
25.43	25.43 10.12 12.59 11.36 27.16 13.33						
Provides: prof. RNDr. Stanislav Krajči, PhD., doc. RNDr. Ondrej Krídlo, PhD.							
Date of last modification: 03.05.2015							
Approved:							

	COURSE INFORMATION LETTER
University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ TVP1/15	Course name: Testing and verification of programs
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 28 esent
Number of ECTS cr	edits: 5
Recommended seme	ster/trimester of the course: 6.
Course level: I.	
Prerequisities:	
Conditions for cours	se completion:
Learning outcomes:	
Verification of progra Introduction to a pro program correctness, background for a pr knowledge. Syntax, method. Floyd method for a correctness, a proof of Hoare method for a verification rules of H termination. Example ******	ourse: ims. ving of program correctness. McCarthy function 91, a proof of a developed , basic definitions of partial and total program correctness. Mathematical roving of program correctness. Predicate calculus, a repetition of a basic semantics, valid well-formed formulas, natural deduction, the resolution proving of program correctness. Flowchart programs, a proof of a partial of a program termination. proving of program correctness. Programming language J0, axioms and the loare axiomatic system, a partial and total correctness of programs, a program es of proofs the partial and total correctness of programs.
Testing of programs. SELENIUM IDE plutest. Automated start The class DefaultSele DefaultSelenium. Imp Selenium server. Inst Loading tests. Causes Test Case. Input data SOnar. Survey of wr Junit Tests.	igin to Firefox. Installation of the plugin. The sequence of steps by the first of prepared test. Possibilities of test corrections. enium and its methods by test writing. Survey of the best methods in the class plementation of methods for tests writing. allation Selenium Sever. Communication with selenium server. s of using loading tests. Jmeter as a one of possible loading tests. for a program testing prepared according to a flowchart program. ritten code, mapping of duplicated procedures, misused procedures. Survey

Recommended literature:

1. Frade, M. J., and Pinto, J. S.: Verification Conditions for Source-level Imperative Programs. Techn. Report DI-CCTC-08-01, 2008, Computer Science and Technology Center, Braga – Portugal

2. Manna, Z. and Pnueli, A.: Temporal Verification of Reactive Systems: Progress. Draft, 1996

 Almeida, J, B., Frade, M. J., Pinto, J. S. and Melo de Sousa, S.: Rigorous Software Development: An Introduction to Program Verification, Springer Verlag, 2011.
 Manna, Z.: Mathematical Theory of Computation, McGraw-Hill, 1974, Slovak translation: SNTL, Praha, 1981.

Course language:

Notes:	Notes:							
Course assessment Total number of assessed students: 43								
А	В	С	D	Е	FX			
18.6	25.58	25.58	11.63	18.6	0.0			
Provides: doc. 1	Provides: doc. RNDr. Gabriela Andrejková, CSc., Mgr. Alexander Szabari, PhD.							
Date of last modification: 18.10.2016								
Approved:	Approved:							

University: P. J.	Šafárik Univers	ity in Košice			
Faculty: Faculty	y of Science				
Course ID: ÚIN ZPIa/18	VF/ Course na	ame: Thesis in in	formatics		
Course type, sc Course type: Recommended Per week: Per Course metho	ope and the met I course-load (h • study period: d: present	thod: ours):			
Recommended	somostor/trimos	stor of the cours	e• 5		
Course level· I			c. J.		
Prerequisities.					
Conditions for	course completi	on.			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course language	<u>بو</u> ،				
Notes.					
Course assessm Total number of	ent f assessed studen	ts: 51			
А	В	С	D	Е	FX
80.39	7.84	7.84	1.96	0.0	1.96
Provides: RND PhD., RNDr. Jun RNDr. Stanislav RNDr. Rastislav RNDr. Csaba Tč Patrik Pekarčík, Date of last mo	r. Peter Gurský, J raj Šebej, PhD., I Krajči, PhD., do Krivoš-Belluš, J orök, CSc., RND RNDr. Viliam K dification: 17.06	PhD., RNDr. Mir RNDr. Tomáš Ba oc. RNDr. Ondre PhD., MSc. Teréz r. JUDr. Pavol So ačala, PhD., doc	oslav Opiela, Ph jtoš, RNDr. Zuza Krídlo, PhD., R zia Mézešová, M okol, PhD., doc. 1 . RNDr. Gabriela	D., RNDr. Ľubor na Bednárová, F NDr. František (gr. Alexander Sz ng. Norbert Kop Andrejková, CS	nír Antoni, 'hD., prof. Galčík, PhD., cabari, PhD., doc. očo, PhD., RNDr. Sc.
Approved:					

University: P. J. Šafárik University in Košice					
Faculty: Faculty	Faculty: Faculty of Science				
Course ID: ÚIN ZPIb/18	IF/ Course na	Course name: Thesis in informatics			
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present					
Number of ECT	FS credits: 2				
Recommended	semester/trimes	ster of the cours	e: 6.		
Course level: I.					
Prerequisities:	ÚINF/ZPIa/22 ai	nd leboÚINF/ZP	Ia/18		
Conditions for a	course completi	ion:			
Learning outco	mes:				
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 49					
А	В	С	D	Е	FX
79.59	8.16	8.16	0.0	2.04	2.04
Provides: RNDr. Ľubomír Antoni, PhD., RNDr. Tomáš Bajtoš, RNDr. Zuzana Bednárová, PhD., PaedDr. Ján Guniš, PhD., RNDr. Miroslav Opiela, PhD., MSc. Terézia Mézešová, doc. RNDr. Ondrej Krídlo, PhD., RNDr. Rastislav Krivoš-Belluš, PhD., RNDr. Peter Gurský, PhD., RNDr. JUDr. Pavol Sokol, PhD., prof. RNDr. Stanislav Krajči, PhD., doc. Ing. Norbert Kopčo, PhD., RNDr. Viliam Kačala, PhD., doc. RNDr. Csaba Török, CSc., RNDr. Patrik Pekarčík					
Date of last modification: 17.06.2018					
Approved:					

	COURSE INFORMATION LETTER
University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ TYS1/15	Course name: Typographical systems
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	ind the method: ce rse-load (hours): idy period: 28 esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course: 4., 6.
Course level: I.	
Prerequisities:	
Conditions for cours	se completion:
Learning outcomes: To provide the bas mathematical formula Brief outline of the c	sic information on principles for typesetting of documents containing as in Plain TeX, AMS-TeX, and LaTeX.
Typesetting of a plain text and footnote com of mathematical form Making tables and Contents, bibliograph	n text, special text symbols, using of text fonts. TeX macros. Enumerations in imand. Parameter setting determining the appearance of the pages. Typesetting nulas in text and displays, aligning formulas. Definitions of TeX macros. pictures. Definitions, theorems, and proofs in a mathematical document ny, sections in a document.
Recommended litera	ature:
1. D. E. Knuth, The	TeXbook, Computers and Typesetting, Addison-Wesley, Reading,
 Massachusetts, 1986. 2. M. Doob, Jemný ú TeX" (text vo³/₄ne prí 3. O. Ulrych, AMS-T 4. J. Chlebíková, AM 	vod do TeXu, CSTUG, 1990; èeský preklad z "A Gentle Introduction to ístupný v CTAN archíve). ČeX za 59 minút, (verzia 1.0), Praha, 1989. IS-TeX (verzia 2.0), Bratislava, 1992.
 M. Spivak, The Jo L. Lamport, LaTeX L. Lamport, Make J. Rybièka, LaTeX 	y of TeX, Amer. Math. Soc., 1986. X: A Document Preparation System, Addison-Wesley, Massachusetts, 1986. Index: An index processor for LaTeX, 17 February 1987. pro začátečníky, Konvoj, Brno, 1995.
9. H. Partl, E. Schleg 10. T. Oetiker, H. Par systému LaTeX2e (no	I, I. Hyna, P. Sýkora, LaTeX – Stručný popis. rtl, I. Hyna, E. Schlegl, M. Kocer, P. Sýkora, Ne příliš stručný úvod do eboli LaTeX2e v 73 minutách).
11. M. Goossens, F. I Reading, Massachuse	Vittelbach, and A. Samarin, The LaTeX Companion, Addison-Wesley, etts, 1994. Kapitola 8 ie volne prístupná v TeX archívoch (ch8 pdf). 4

12. G. Grätzer, Math into LaTeX, 3rd edition, Birkhäuser, Boston, 2000.

Course language:

Slovak or english

Notes:					
Course assessment Total number of assessed students: 251					
А	В	С	D	Е	FX
48.21	17.93	19.92	6.37	6.77	0.8
Provides: prof. RNDr. Stanislav Krajči, PhD.					
Date of last modification: 10.02.2021					
Approved:					

University: P. J. Šafárik University in Košice				
Faculty: Faculty of Science				
Course ID: ÚINF/ POS2/15	Course name: User environments of operating systems			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present				
Number of ECTS cr	edits: 2			
Recommended seme	ster/trimester of the course: 1.			
Course level: I.				
Prerequisities:				
Conditions for cours - written final theoret - written final practic	e completion: ical exam (score at least 50%), al exam (score at least 50%)			
Learning outcomes: To provide theoretic necessary knowledge	al and practical background for studying computer science, by giving the in the usage of Unix/Linux operating systems.			
Brief outline of the c (1) Introduction to Uti (2) Linux ommand lin (3) Text processing to (4) Managing files (5) Managing users, g (6) Managing process (7) Managing softwar (8) Administering the (9) Basic networking (10) Managing networ (11) Managing disk p	ourse: nix/Linux systems ne pols groups and rights ses re and packages e system - system booting, jobs, logging ork interfaces partitions			
Recommended litera (1) LPIC-1 Linux Pro 102-400 4th Edition (2) The Linux Docum (3) The Linux Comm	ture: ofessional Institute Certification Study Guide Exam 101-400 and Exam nentation Project (https://www.tldp.org/) and Line, 2nd Edition: A Complete Introduction 2nd Edition			
Course language:				

Notes:

Course assessment Total number of assessed students: 113					
А	В	С	D	Е	FX
46.02	8.85	22.12	7.96	12.39	2.65
Provides: RNDr. JUDr. Pavol Sokol, PhD., Mgr. Richard Staňa					
Date of last modification: 14.01.2020					
Approved:					

University: P. J. Šafárik University in Košice				
Faculty: Faculty of Science				
Course ID: ÚINF/ WBdi/15	Course name: Web and a development of user environment			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 3 Per study period: 42 Course method: present				
Number of ECTS cr	redits: 3			
Recommended seme	ester/trimester of the course: 2., 4.			
Course level: I.				
Prerequisities:				
Conditions for cour 50% of the mark for	se completion: continuous assignments and discussion contributions			
Learning outcomes: Create accessible and Apply the rules for the Maintain website and	d usable Web Sites, used the standards (X) HTML and CSS. he page layout. d use the basic procedures for their promotion.			
 Brief outline of the course: 1 Introduction, specifics of distance learning, orientation in LMS Moodle. 2 (X)HTML - markup language for describing the structure and content of HTML documents. 3 (X)HTML - markup language for describing the structure and content of HTML documents. 4 (X)HTML - markup language for describing the structure and content of HTML documents. 5 CSS - a markup language for describing how (X)HTML documents are displayed. 6 CSS - a markup language for describing how (X)HTML documents are displayed. 7 Page layout - the layout of the content of a web page. 8 Page layout - the layout of the content of a web page. 9 Web page accessibility. 10 Web page accessibility. 11 Usability of web pages. 12 Usability of web pages. 				
Recommended liter Basic sources for dis TITTEL, Ed a Jeff N 392 pFor dummie LAGRONE, Benjam Birmingham [u.a.]: I CONNOR, Joshue C Distributed to the bo ISBN 978-1-4302-4 KRUG, Steve. Nenu použitelnost webu. V	ature: tance courses will be published in LMS Moodle. IOBLE. HTML, XHTML & CSS. 7th ed. Hoboken, NJ: Wiley, c2011, xx, vs. ISBN 04-709-1659-1. in. HTML5 and CSS3 responsive Web design cookbook. 1. publ. Packt Publishing, 2013. ISBN 978-184-9695-442. D. Pro HTML5 accessibility: building an inclusive web. New York: ok trade worldwide by Springer Science Business Media, c2012, xix, 365 p. 195-9. t'te uživatele přemýšlet!: praktický průvodce testováním a opravou chyb Vyd. 1. Brno: Computer Press, 2010, 165 s. ISBN 978-80-251-2923-4.			

LEAVITT, Michael O. a Ben SHNEIDERMAN. Research-Based Web Design & Usability Guidelines. Washington, D.C.: U.S. General Services Administration, 2006, xxii, 267 p. ISBN 0-16-076270-7. Dostupné z: https://www.usability.gov/sites/default/files/documents/ guidelines_book.pdf

Vyhláška Úradu podpredsedu vlády Slovenskej republiky pre investície a informatizáciu zo 16. marca 2020 o štandardoch pre informačné technológie verejnej správy. In: . Bratislava: Ministerstvo spravodlivosti Slovenskej republiky, 2020, ročník 2020, číslo 78. Dostupné z: https://www.slov-lex.sk/static/pdf/2020/78/ZZ 2020 78 20210623.pdf

Course language:

Slovak language, knowledge of English is required only for reading documentation and web standards.

Notes:

Teaching is realized only by distance learning.

Course assessment

Total number of assessed students: 48

abs	n	neabs	Z
66.67	31.25	2.08	0.0

Provides: doc. RNDr. L'ubomír Šnajder, PhD., PaedDr. Ján Guniš, PhD.

Date of last modification: 31.08.2021

Approved: