## CONTENT

1. Academic English	3
2. Advanced programming	5
3. Advanced programming	6
4. Advanced programming in Python	7
5. Algebra I	9
6. Algebra II for informaticians and physicists	.10
7. Algorithms and data structures	.11
8. Applied probability and statistics.	. 13
9. Automata and formal languages	.15
10. Automata and formal languages	.17
11. Bachelor Thesis and its Defence	. 19
12. Communicative Competence in English	. 20
13. Communicative Grammar in English	.22
14. Communicative Grammar in German Language	. 23
15. Computability theory	. 24
16. Computational and cognitive neuroscience I	25
17 Computer network Internet	27
18 Concurrent programming	29
19 Cryptographic systems and their applications	31
20 Database systems	33
21 Database systems	35
22 Development of mobile applications	37
23 Discrete mathematics for informaticians	38
24 English Language of Natural Science	40
25 Essentials of ABAP	42
26. Essentials of the SAP System for Users	. 42
27 Essentials of the SAP Technology	<u>45</u>
27. Essentials of the SAT Technology	. <del>4</del> 5 17
20. Function of real variables	. <del>4</del> / / 8
30 Functional programming	.40
21. Geographic Information Systems	.50
22 Information J	52
32. Informatics 1	.55
33. Internet of Things	. 34
34. Introduction to Study of Sciences	. 33
35. Introduction to computer graphics	. 30
36. Introduction to information security	.37
37. Introduction to law for informatics	. 38
38. Introduction to neural networks.	. 39
39. Introduction to study of informatics	.01
40. Legal aspects of informatics	.62
41. Logic programming	. 64
42. MAILAB and neurocognition.	.65
43. Modern web technologies	.67
44. Operating systems	.69
45. Physics for Informaticists I	/1
46. Principles of Computers, Logic Circuits	.73
4/. Principles of computers	. 74
48. Pro-seminar to bachelor thesis	. 76

49. Professional experience.	
50. Programming language C	79
51. Programming of web-pages	
52. Programming, algorithms, and complexity	
53. Programming, algorithms, and complexity	85
54. Programming, algorithms, and complexity	
55. Project I	
56. Project II	
57. Resolving computer security incidents	92
58. Seaside Aerobic Exercise	
59. Secrets of microworld	95
60. Seminar on computer graphics	96
61. Seminar to operation systems	97
62. Software engineering	
63. Software engineering	
64. Special seminar to bachelor thesis	101
65. Special seminar to bachelor thesis	103
66. Specialized seminar to bachelor thesis	105
67. Specialized seminar to bachelor thesis	106
68. Sports Activities I	107
69. Sports Activities II	109
70. Sports Activities III	
71. Sports Activities IV	113
72. Student scientific conference	115
73. Summer Course-Rafting of TISA River	116
74. Survival Course	118
75. Symbolic logic	
76. Symbolic logic	
77. System programming	
78. Thesis in informatics	
79. Thesis in informatics	125
80. Typographical systems	126
81. User environments of operating systems	

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	of Science						
<b>Course ID:</b> CJP/ PFAJAKA/07	rse ID: CJP/ JAKA/07 Course name: Academic English						
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 ECT	S credits: 2						
Recommended	semester/trimes	ster of the cours	e:				
Course level: I.,	II., N						
Prerequisities:							
Combined method of teaching (classroom/distance) Active classroom participation, assignments handed in on time, 2 absences tolerated 1 test (10th week), no retake. (in classroom, in case of distance learning due to worsened epidemiological situation – online) Presentation on chosen topic (in case of distance learning - online thorugh MS Teams) Final evaluation- average assessment of test (40%), essay (30%) and presentation (30%). Grading scale: A 93-100% B 86-92% C 79-85% D 72-78% E 65-71% FX 64% and less							
Learning outcom	mes:						
Brief outline of	the course:						
Recommended Seal B.: Academ T. Armer :Camb M. McCarthy M Zemach, D.E, R Olsen, A. : Activ www.bbclearnin Cambridge Acad	literature: nic Encounters, 6 ridge English fo , O'Dell F Ac umisek, L.A: Ac ve Vocabulary, F genglish.com demic Content E	CUP, 2002 or Scientists, CUF cademic Vocabula cademic Writing, Pearson, 2013 Dictionary, CUP, 2	P 2011 ary in Use, CUP Macmillan 200 2009	2008 5			
Course language: English language, level B2 according to CEFR.							
Notes:							
Course assessm Total number of	Course assessment Total number of assessed students: 380						
A	В	С	D	E	FX		
33.68	22.11	15.53	10.0	6.58	12.11		
Provides: Mgr. V	Viktória Mária S	llovenská					
Date of last mod	lification: 17.09	9.2020					

Approved:

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	of Science						
<b>Course ID:</b> ÚIN PRR1a/15	Course ID: ÚINF/ Course name: Advanced programming PRR1a/15						
Course type, sco Course type: P Recommended Per week: 2 Pe Course method	ope and the met ractice course-load (h r study period: l: present	thod: ours): 28					
Number of ECT	S credits: 2						
Recommended	semester/trimes	ster of the cours	e:				
Course level: I.							
Prerequisities:							
Conditions for <b>c</b>	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: 71					
А	В	С	D	E	FX		
53.52	7.04	8.45	4.23	21.13	5.63		
Provides: RNDr	. Rastislav Krivo	oš-Belluš, PhD.		<u>.                                    </u>			
Date of last mod	lification: 03.05	5.2015					
Approved:							

University: P. J.	Šafárik Univers	ity in Košice				
Faculty: Faculty	of Science					
<b>Course ID:</b> ÚIN PRR1b/15	Course ID: ÚINF/ Course name: Advanced programming PRR1b/15					
Course type, sco Course type: P Recommended Per week: 2 Pe Course method	ope and the me practice l course-load (h er study period: l: present	thod: ours): 28				
Number of ECT	<b>S credits:</b> 2					
Recommended	semester/trimes	ster of the cours	e:			
<b>Course level:</b> I.						
Prerequisities:	ÚINF/PRR1a/15					
Conditions for a	course completi	on:				
Learning outco	mes:					
Brief outline of	the course:					
Recommended	literature:					
Course languag	e:					
Notes:						
Course assessm Total number of	ent assessed studen					
A	В	С	D	Е	FX	
47.62	4.76	0.0	21.43	16.67	9.52	
Provides: RNDr	. Rastislav Krive	oš-Belluš, PhD.		L		
Date of last mod	dification: 03.05	5.2015				
Approved:						

University: P. J. Safarik Un	iversity in	Kosice
------------------------------	-------------	--------

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 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 assessed students: 35						
	D	G	Т			

А	В	С	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	. Šafárik Univers	sity in Košice				
Faculty: Facult	y of Science					
Course ID: ÚM ALGa/10	Course ID: ÚMV/ Course name: Algebra I ALGa/10					
Course type, sc Course type: 1 Recommended Per week: 3 / 2 Course metho	cope and the me Lecture / Practice d course-load (h 3 Per study peri d: present	thod: e iours): od: 42 / 42				
Number of EC	TS credits: 7					
Recommended	semester/trime	ster of the cours	<b>e:</b> 1.			
Course level: I.						
Prerequisities:						
Conditions for According to th exam	course completing results from the	ion: ne semester and i	n view of the re	sults of the writt	en and oral final	
Learning outco To obtain basic concerning syst	mes: knowledge from ems of linear equ	n number theory uations. To be ab	concerning div le to apply it in a	visibility and from concrete excercis	m linear algebra ses.	
<b>Brief outline of</b> Divisibility in Computing with	<b>the course:</b> Z. Fields. Syste h matrices. Deter	ms of linear equ minants, Cramer	ations, Gauss e rule.	limination. Map	s, permutations.	
Recommended T.S Blyth, E.F. K. Jänich: Line	<b>literature:</b> Robertson: Basic ar algebra, Sprin	e linear algebra, S ger Verlag, 1991.	Springer Verlag,	2001.		
<b>Course languag</b> Slovak	ge:					
Notes:						
Course assessm Total number o	Course assessment Total number of assessed students: 1279					
А	В	C	D	Е	FX	
11.81	11.65	19.0	17.9	28.3	11.34	
<b>Provides:</b> prof. Janičková, PhD	RNDr. Danica S ., RNDr. Simona	tudenovská, CSc. Rindošová, RNI	., RNDr. Igor Fa Dr. Ivana Varga	brici, Dr. rer. nat	., RNDr. Lucia	
Date of last mo	dification: 31.0	1.2019				
Approved:						

University: P. J.	Šafárik Univ	ersity in Košice					
Faculty: Faculty	of Science						
<b>Course ID:</b> ÚM ALG3b/10	Course ID: ÚMV/ Course name: Algebra II for informaticians and physicists						
Course type, sco Course type: L Recommended Per week: 4 / 2 Course method	ope and the pecture / Prac course-load Per study p d: present	method: tice l (hours): eriod: 56 / 28					
Number of ECT	<b>S credits:</b> 7						
Recommended	semester/tri	nester of the course	<b>::</b> 2.				
Course level: I.,	II.						
Prerequisities:	ÚMV/ALGa/	10					
<b>Conditions for</b> Exam	course comp	letion:					
<b>Learning outco</b> To provide deep	mes: er knowledge	e on vector spaces, li	near transforma	tions and Euclide	an spaces.		
Vector spaces, s spaces. The ran tranformations, transformations of linear transfo Affine spaces, s and quadrics. <b>Recommended</b>	subspaces. A k of a matrix matrices of regular matr rmations. ubspaces and	basis, a dimension c. Linear transformat sums and composi ices. Similar matrices their positions. Euc	and a character tions and their r tions of linear s. Characteristic lidean spaces, th	rization of n-dim matrices. Operati tranformations. vectors and chara he distance of sub	ensional vector ons with linear Regular linear acteristic values ospaces. Conics		
A. F. Beardon: A G. Birkhoff, S. I	Algebra and ( Mac Lane: A	Geometry, Cambridge Survey of Modern A	e University Pre Ilgebra, New Yo	ess, 2005 ork 1965			
<b>Course languag</b> Slovak	e:						
Notes:							
Course assessment Total number of assessed students: 290							
А	В	C	D	Е	FX		
15.52	10.69	12.76	18.62	31.72	10.69		
<b>Provides:</b> doc. F Janičková, PhD.	RNDr. Romar	Soták, PhD., RNDr.	Mária Maceko	vá, PhD., RNDr.	Lucia		
Date of last mo	dification: 26	5.03.2020					
Approved:							
* *							

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

Recommended semester/trimester of the course: 4.

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 assessment Total number of assessed students: 146								
А	A B C D E 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. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> ÚINF/ APS1/15	Course name: Applied probability and statistics
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: 5.
Course level: I., II.	
<b>Prerequisities:</b> ÚMV MAN2c/10 and leboÚ	/FRPb/19 and leboÚMV/MTIb/21 and leboÚMV/MZIb/10 and leboÚMV/ JMV/MTFb/15
<b>Conditions for cours</b> Written works during Written and oral exar	e completion: the semester, project. n.
Learning outcomes: Acquired basic conce software.	pts, techniques and models of probability theory, statistics and corresponding
<b>Brief outline of the c</b> 1) Random event, pro 2) Probability distribution 3) Characteristics of p 4) Basic discrete and 5) The law of large n 6) Random sample. If 7) Quantiles, basic di 8) Theory of estimate 9) Tests on distribution 10) Modeling of depent 11) Polynomial regree 12) Pseudorandom quantility	ourse: bability and conditional probability. ution laws. position, variability and dependence. continuous distributions. umbers and the central limit theorem. nitial analytical and geometric analysis of data. stributions and basic theorem of mathematical statistics. es, method of moments and maximum likelihood. Hypothesis testing. on parameters and goodness-of-fit tests. endencies and noise. Least squares method and smoothing. ssion models. uantities and Monte Carlo methods.
Recommended litera - Cs. Török: Úvod do - M.R.Spiegel, J.J.Sc - J. Maindonald, W.J. Approach, CAMBRI	ture: o teórie pravdepodobnosti a matematickej štatistiky, Košice, 1992 hiller, R.A.Srinivasan, Probability and Statistics, McGraw Hill, 2009 Braun, Data Analysis and Graphics Using R – an Example-Based DGE UNIVERSITY PRESS, 2010

Slovak or english

Notes:

Face to face or online teaching.

Content prerequisites: the basics of differential, integral and matrix calculus									
Course assessn	Course assessment								
Total number o	f assessed studen	ts: 74	•						
Α	В	B C D E FX							
17.57	17.57 17.57 21.62 12.16 29.73 1.35								
Provides: doc. RNDr. Csaba Török, CSc.									
Date of last modification: 02.07.2021									
Approved:									

<b>University:</b> P.	J.	Šafárik	University	in Košice
-----------------------	----	---------	------------	-----------

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 University in Košice								
Faculty: Faculty of Science								
Course ID: ÚINF/ CAFJ1b/15	Course name: Automata and formal languages							
Course type, scope and Course type: Lecture Recommended cours Per week: 2 / 1 Per st Course method: press	d the method: / Practice e-load (hours): tudy period: 28 / 14 ent							
Number of ECTS crea	lits: 5							
<b>Recommended semest</b>	cer/trimester of the course: 5.							
Course level: I., II.								
Prerequisities: ÚINF/A	AFJ1a/15							
<b>Conditions for course</b> Test and oral examinat	completion: ion.							
Learning outcomes: To provide theoretical b knowledge in theory of	background for studying computer science in general, by giving the necessary f automata.							
Brief outline of the con 1: Pushdown automata by empty pushdown 2: Deterministic pushd 3: Context-free gramma of type A→epsilon and 4: Relation between con- grammar to a pushdow 5: Pumping lemma II: 5 6: Pumping lemma II: 6 7: Closure properties o 8: Closure properties o 9: Pushdown automata practice 10: Context-sensitive grant 11: Closure properties 12: Recursively enu deterministic Turing magrammar, transforming properties 13: Universal Turing magrammar. Pagamman ded literate	urse: :: definition of a pushdown automaton, accepting by final states, accepting own automata: examples of application in practice ars: basic definition, leftmost derivation, derivation tree, elimination of rules d A→B, Chomsky normal form ontext-free grammars and pushdown automata: transforming context-free n automaton, transforming pushdown automaton to a context-free grammar Statement of the lemma and its proof applications of the lemma f context-free languages f deterministic context-free languages a producing an output: basic definitions and properties, applications in languages: context-sensitive grammar, nondeterministic linear-bounded 0, transforming context-sensitive grammar to an LBA, transforming LBA to mmar of context-sensitive languages merable languages: phrase-structure grammar, nondeterministic and achine, transforming nondeterministic Turing machine to a phrase-structure g phrase-structure grammar to a deterministic Turing machine, closure hachine decidable problems of the formal language theory							

#### **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: 567

А	В	С	D	Е	FX
37.92	15.87	19.75	17.64	6.17	2.65

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

Date of last modification: 17.08.2021

**Approved:** 

University: P. J	. Šafárik Univers	ity in Košice						
Faculty: Faculty of Science								
Course ID: ÚINF/ Course name: Bachelor Thesis and its Defence BPO/14								
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:					
Course level: 1.								
Prerequisities:								
Conditions for	course completi	on:						
Learning outco	omes:							
Brief outline of	the course:							
Recommended	literature:							
Course languag	ge:							
Notes:								
Course assessment Total number of assessed students: 112								
А	В	С	D	Е	FX			
47.32 27.68 11.61 8.04 5.36 0.0								
Provides:								
Date of last modification: 09.01.2019								
Approved:								

University: P. J. Šafárik University in Košice								
Faculty: Faculty of S	Faculty: Faculty of Science							
Course ID: CJP/       Course name: Communicative Competence in English         PFAJKKA/07       PFAJKKA/07								
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	e a ekológia								
Výnimky zo slovosledu									
Frázové slovesá a ich použitie									
Charakteristiky neformálneho diškurzu									
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:									
<b>Course assessmen</b> 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. Ba	arbara Mitríkov	vá, Mgr. Zuzana 1	Naďová						
Date of last modif	fication: 11.02	.2021							
Approved:									

University: P. J	. Šafárik Univer	sity in Košice				
Faculty: Facult	y of Science					
<b>Course ID:</b> CJF PFAJGA/07	Course ID: CJP/       Course name: Communicative Grammar in English         PFAJGA/07       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 assessm Total number of	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				
<b>Course ID:</b> KGE NJKG/07	ER/ Course na	ame: Communica	ative Grammar i	n German Langu	age
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	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. Ša	afárik Univers	ity in Košice					
Faculty: Faculty of	f Science						
<b>Course ID:</b> ÚINF/ TVY/15	Irse ID: ÚINF/ Y/15Course name: Computability theory						
Course type, scop Course type: Lec Recommended co Per week: 2 / 1 P Course method:	e and the met ture / Practice ourse-load (he er study perio present	hod: ours): od: 28 / 14					
Number of ECTS	credits: 4						
Recommended ser	nester/trimes	ter of the cours	e: 5.				
Course level: I., II							
Prerequisities:							
Conditions for cou	irse completi	o <b>n:</b>					
<b>Learning outcome</b> To provide theore students with basic	es: tical backgrou knowledge o	and for studying f the theory of co	g computer scie omputability.	nce in general, 1	by familiarising		
Turing machine a Kleene's normal for machine, partial re the halting problem	s a formalisat orm theorem. T cursive and ca n of a Turing r	tion of the notion The equivalences Ilculable by a contact of the	on of an algorit of the notion of mputer program omputer program	thm. Partial recu a function calcul . Algorithmical u n.	arsive functions. able by a Turing indecidability of		
Recommended lite 1. BRIDGES, Dou ISBN:: 978-03879 2. BUKOVSKÝ, I 3. MACHTEY, Mi NorthHolland, A 4. KRAJČI, Stanis ucebneTexty/vypo	erature: glas. Computa 41745 Lev. Teória alg chael a Paul Y msterdam 197 lav. Teória vyj citatelnost.pdf	ability, A Mather oritmov, ES UPJ OUNG. An Intr '8. počítateľnosti. ht	natical Sketch b Š, Košice, 1999 oduction to the tp://ics.upjs.sk/~	ook. SpringerV 9. ISBN 8070973 General Theory o ~krajci/skola/vyu	erlag, 1994. 730 of Algorithms, cba/		
Course language:							
Notes:							
Course assessmen Total number of as	t sessed studen	ts: 277					
A	В	С	D	Е	FX		
46.93	46.93 11.91 13.0 5.78 6.14 16.25						
Provides: prof. RN	Dr. Stanislav	Krajči, PhD.		1			
Date of last modif	ication: 08.07	.2021					
Approved:							
-	· · · ·						

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> 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:	
<b>Conditions for cours</b> 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.
<ul> <li>Brief outline of the c</li> <li>1. Intro to neural and</li> <li>2. Overview of anato</li> <li>3. Methods of study i</li> <li>4. Neuron: anatomy,</li> <li>5. Propagation of sign</li> <li>6. Synaptic transmisss</li> <li>7. Psychology of mer</li> <li>8. Vision: Intro. Percesitance.</li> <li>9. Hearing and audito</li> <li>10. Language, psycho</li> <li>11. Attention.</li> <li>12. Crossmodal interation.</li> </ul>	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. ception of brightness, edges, color. Model BCS/FCS. Perception of size and ory cognition. blinguistics, speech perception and production. action (vision, hearing, touch). ecision 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: <sup>†</sup> 978-0262701099	nture: un 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 <sup>†</sup> :
Course language:	

Slovak or Engl	ish					
Notes: Content prereq Algebra, progra	uisites: amming (Matlab)	).				
<b>Course assessn</b> 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 mo	dification: 08.07	7.2021				
Approved:						

<b>University:</b> P. J. Safarik University in I	n Košice	rsity in	Univers	Šafárik	J.	P.	<b>University:</b>
--	----------	----------	---------	---------	----	----	--------------------

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 langua	ge:				
Notes:					
Course assessn Total number o	nent f assessed studen	ts: 791			
А	В	С	D	E	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. Šafá	rik University in Košice						
Faculty: Faculty of Science							
Course ID: ÚINF/ KOPR/19	Course name: Concurrent programming						
Course type, scope a Course type: Lectur Recommended cour Per week: 1 / 2 Per Course method: pre	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						
<b>Conditions for cours</b> 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 - wor 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 litera	ourse: eads publication safe classes ions in rk stealing pattern mig - Project Reactor re REST server ces - From code to WSDL ces - From WSDL to code Akka						
1. B. Goetz, 11m Pete Concurrency in Pract 2. P. Hyde: Java Thre 3. T. White: Hadoop:	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						
A B C D E FX						
44.87	25.64	15.38	10.26	3.85	0.0	
Provides: RND	r. Peter Gurský, l	PhD., RNDr. Ról	oert Novotný, Ph	D.	• •	
Date of last modification: 09.07.2021						
Approved:						

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> ÚINF/ KRS/15	Course name: Cryptographic systems and their applications
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
Number of ECTS cr	edits: 6
Recommended seme	ster/trimester of the course: 3., 5.
Course level: I., II.	
Prerequisities:	
<b>Conditions for cours</b> Homeworks, midtern Final written exam, p	e completion: n written exam, active participation in laboratory exercises. cossibly oral exam.
This course covers the is on definitions, theo practice. Topics inclu- block cipher design a an introduction to cry and certificates.	he basic knowledge in understanding and using cryptography. The main focus pretical foundations, and rigorous proofs of security, with some programming ide symmetric and public key encryption, message integrity, hash functions, and analysis, number theory, and digital signatures. The course also provides /ptographic protocols for authentication and key management, including PKI
Brief outline of the c Classical cryptograp Symmetric ciphers - ciphers - RSA, Elga codes, digital signatu	hy, basic information theory, cryptoanalysis, security of classical ciphers. stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric mal, elliptic curve cryptosystems. Hash functions, message authentication res. Authentication, key establishment and distribution, certificates.
Recommended litera 1. PAAR, Ch., PELZ 2. STINSON, D. R. 3. MAO, W. Modern 4. MENEZES, A., O 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
<b>Course language:</b> Slovak or English	
<b>Notes:</b> Content prerequisitie	s: basic number theory and algebra, basic programming

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

University: P. J. Šafárik University in Košice						
Faculty: Faculty of Science						
<b>Course ID:</b> ÚINF/ DBS1a/15	Course name: Database 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 ECTS cr	edits: 5					
Recommended seme	ster/trimester of the course: 3.					
Course level: I., II.						
Prerequisities:						
Conditions for course completion: Written works during the semester, project. Written and oral exam.						
Learning outcomes: Acquired basic concepts and techniques of relational database theory and corresponding software. Know the principles of relational databases and learn the basics of query language. Understand the formal foundations of database systems - three-valued logic, relational algebra. Be able to model and design DB, and the role of data warehouses.						
<ul> <li>Brief outline of the course: <ol> <li>Relational databases. Query language SQL, filtering.</li> <li>Data types, operators, numerical, string and time functions.</li> <li>JOIN operations.</li> <li>AGGREGATION AND GROUP BY.</li> <li>Data and database models. Relational scheme. RDB principles. Data integrity.</li> <li>DB design, ER diagrams.</li> <li>System commands about DB and tables. Cascading deletion and update.</li> <li>Nested queries. ROLLUP. CASE expression.</li> <li>Three-valued logic. Quantifiers and NOT. Set operations.</li> <li>Data science and knowledge acquisition using R.</li> <li>Data warehouses. Data cube. Pivot table.</li> <li>Normalization of relational databases - 1. Relational algebra.</li> </ol> </li> </ul>						
<ul> <li>Recommended literature:</li> <li>C.J. Date, Database Design and Relational Theory, 2012, O'Reilly Media, Inc., ISBN:</li> <li>978-1-449-32801-6</li> <li>J. Murach, Murach's MySQL, 3rd Edition, 2019, Mike Murach &amp; Associates, Inc., ISBN-10:</li> <li>1943872368</li> <li>- R. Ramakrishnan, J. Gehrke, Database Management Systems, 2020, McGraw-Hill, ISBN13</li> <li>9780071231510</li> <li>- S. Krajčí: Databázové systémy, UPJŠ, 2005</li> </ul>						

Course language:								
Notes:								
Course assessment Total number of assessed students: 858								
А	В	С	D	Е	FX			
10.61	9.21	17.95	22.84	32.52	6.88			
Provides: doc. RNDr. Csaba Török, CSc., Mgr. Dávid Varga								
Date of last modification: 02.07.2021								
Approved:								

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
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						
<b>Conditions for cours</b> 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.						
<b>Brief outline of the c</b> 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. ind 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	<b>ture:</b> 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	С	D	Е	FX				
9.7	8.2	12.3	24.45	34.97	10.38				
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: ÚINF/Course name: Development of mobile applicationsVMA1/15									
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	hod: ours): 42							
Number of ECT	S credits: 3								
Recommended s	emester/trimes	ter of the cours	e: 4., 6.						
Course level: I.,	II.								
Prerequisities:									
Conditions for c	ourse completi	on:							
Learning outcon	nes:								
Brief outline of t	the course:								
Recommended l	iterature:								
Course language	2:								
Notes:									
Course assessme Total number of	ent 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. N	Miroslav Opiela,	PhD.	<u>.</u>				
Date of last mod	ification: 02.07	.2015							
Approved:									

University: P. J	. Šafárik Univers	sity in Košice					
Faculty: Facult	y of Science						
<b>Course ID:</b> ÚM DSM3a/10	Course ID: ÚMV/       Course name: Discrete mathematics for informaticians         DSM3a/10       Course name: Discrete mathematics for informaticians						
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/trime	ster of the cours	<b>e:</b> 3.				
Course level: I.							
Prerequisities:							
Conditions for Based on result Based on semes	Conditions for course completion: Based on results of two semestral tests. Based on semestral evaluation and the result of examination.						
<b>Learning outco</b> To present the b	<b>Learning outcomes:</b> To present the basics of combinatorics and their applications in computer science.						
<b>Brief outline of the course:</b> 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.							
<ul> <li>Recommended literature:</li> <li>1. S. Jendrol', P. Mihók: Diskrétna matematika I., UPJŠ Košice 1992</li> <li>2. J. Nešetřil, J. Matoušek: Kapitoly z diskrétni matematiky</li> <li>3. E. R. Scheinerman: Mathematics - a discrete introduction, Brooks/Cole Publ. Comp. Pacific Grove 2000.</li> <li>4. R.P. Grimaldi: Discrete and Computational Mathematics, Addison-Wesley Publ. CoRending 1994.</li> </ul>							
Course language: Slovak							
Notes:							
Course assessm Total number of	ent f assessed studer	nts: 274					
А	В	C	D	Е	FX		
5.47	2.92	9.49	16.79	52.92	12.41		
Provides: RND	r. Mária Maceko	ová, PhD.		·			
Date of last mo	dification: 22.0	9.2019					

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
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	<b>be completion:</b> (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. red 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. the 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) e 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 EFR) with focus on terminology of English for natural science.
<ul> <li>Brief outline of the c</li> <li>1. Introduction to stude</li> <li>2. Selected aspects of</li> <li>3. Talking about acade</li> <li>4. Discussing science</li> <li>5. Defining scientific</li> <li>6. Expressing cause a</li> <li>7. Describing structure</li> <li>8. Explaining processe</li> <li>9. Comparing objects</li> <li>10. Talking about processe</li> <li>11. Referencing author</li> </ul>	ourse: dying language f scientific language lemic study terminology and concepts und effect res ses s, structures and concepts oblem and solution ors

12. Giving examp	12. Giving examples							
13. Visual aids an	13. Visual aids and numbers							
14. Referencing th	14. Referencing time and place							
Presentation topics related to students'study fields.								
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	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:								

University: P. J. Safarik University in Kosice							
Faculty: Faculty of Science							
Course ID: ÚINF/ Course name: Essentials of ABAP ABSP/16							
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:							
<ol> <li>Principles of programming in ABAP, declaration of variables, the basic syntax of the language ABAP Open SQL, ABAP Workbench navigation, ABAP editor.</li> <li>Arithmetic, logic conditions, string operations, cycles, test programs using a debugger.</li> <li>An overview of the most important commands of ABAP, definition elementary and structured data objects, functional groups and function modules.</li> <li>Individual work for practice.</li> </ol>							
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/16Course name: Essentials of the SAP System for Users						
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 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:						
<ol> <li>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.</li> <li>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).</li> <li>-4. 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.</li> <li>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.</li> <li>67. Individual work for practice.</li> </ol>						
Recommended literature:						
Course language:						
Notes:						
<b>Course assessment</b> Total number of asse	ssed studen	ts: 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

University: P. J. Šafá	rik Univers	ity in Košice					
Faculty: Faculty of S	Faculty: Faculty of Science						
<b>Course ID:</b> ÚINF/ ZTSP/16	Course ID: ÚINF/ Course name: Essentials of the SAP Technology CTSP/16						
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.					
<b>Course level:</b> I., N							
Prerequisities:							
Conditions for cours	e completi	on:					
Learning outcomes:							
<ol> <li>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.</li> <li>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).</li> <li>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.</li> <li>SAP basics and navigation - multiple modes, command shortcuts, searching and displaying data - variants, output format - changing and saving the layout, creating a report.</li> <li>SAP basics and navigation - Business Workplace, report printing, report export to local file, system information.</li> <li>Thividual work for practice.</li> </ol>							
Recommended litera	iture:						
Course language:							
Notes:							
Course assessment Total number of assessed students: 340							
abs		n	neabs				
96.76		1.18	2.06				
Provides: Ing. Slávka	ı Šimková,	PhD., RNDr. Slavka Blichová					
Date of last modification: 30.08.2021							

University: P. J. Š	afárik Univers	ity in Košice				
Faculty: Faculty of	of Science					
Course ID: ÚMV/Course name: Function of real variableFRPa/19						
Course type, scop Course type: Le Recommended o Per week: 2 / 4 I Course method:	be and the met cture / Practice course-load (h Per study perio present	hod: ours): od: 28 / 56				
Number of ECTS	credits: 7					
Recommended se	mester/trimes	ster of the cours	<b>e:</b> 1.			
Course level: I.						
Prerequisities:						
<b>Conditions for co</b> Written exam.	urse completi	on:				
<b>Learning outcom</b> The course provid of real functions of	es: les an introduc of one real vari	tory knowledge of able, and a devel	on basic tools of opment of certa	differential and i in calculation skil	ntegral calculus ls in the field.	
Brief outline of th 1. Basics of mathe 2. Real functions 3. Differential cal 4. Integral calculu	te course: ematical logic a - basic notions culus of functions as of functions	and notations. , operation, grapl ons of one real varial	hs, continuity. ariable - differer ble - Newton int	ntiability, using th egral.	e derivative.	
Recommended life 1. Brannan, D.: A Cambridge 2006. 2. Bruckner, A. M. ClassicalRealAna 3. Zorich, V. A.: M	terature: First Course in I., Bruckner J. lysis.com, 200 Mathematical A	n Mathematical A B., Thomson, B. 8. Analysis I, Spring	Analysis, Cambr S.: Real Analys ger-Verlag 2002.	idge University P is, Second Edition	'ress, n,	
Course language:						
Notes:						
Course assessment Total number of assessed students: 621						
A	В	С	D	Е	FX	
7.89	9.02	15.46	22.38	35.59	9.66	
<b>Provides:</b> doc. RN PhD.	IDr. Ondrej Hu	utník, PhD., RNE	Dr. Lenka Halčin	ová, PhD., RNDr	. Jana Borzová,	
Date of last modi	fication: 26.03	.2019				
Approved:						

University. F. J. Salarik University in Rusice	University	P. J.	Šafárik	University in	Nošice
--	------------	-------	---------	---------------	--------

Faculty: Faculty of Science

Course ID: ÚMV/	Course name: Function of real variables
FRPb/19	

# Course type, scope and the method:

Course type: Lecture / Practice

**Recommended course-load (hours): Per week:** 4 / 3 **Per study period:** 56 / 42

Course method: present

Number of ECTS credits: 8

Recommended semester/trimester of the course: 2.

Course level: I., II.

**Prerequisities:** ÚMV/FRPa/19 and leboÚMV/MZIb/10

### **Conditions for course completion:**

Ongoing evaluation takes the form of small tests, projects and two main online tests during the semester. Overall evaluation is given by ongoing evaluation (60%), written and oral part of the exam (40%).

### Learning outcomes:

The course provides students the basics of mathematical analysis necessary to study physics and computer science and related fields. The students also learn mathematical culture, notation and mathematical way of thinking and expression.

### Brief outline of the course:

### **Recommended literature:**

 B. Mihalíková, J. Ohriska: Matematická analýza 1, 2, vysokoškolský učebný text, UPJŠ v Košiciach, Košice, 2000, 2007.
 L. Kluvánek, I. Mišík, M. Švec: Matematika I, II, SVTL, Bratislava, 1959.
 Z. Došlá, O. Došlý: Diferenciální počet funkcí více proměnných, vysokoškolský učebný text, Masarykova univerzita v Brne, Brno, 2003.
 J. Kopáček: Matematická analýza nejen pro fyziky I, II, Matfyzpress, Praha, 2004, 2007.
 J. C. Robinson: An introduction to ordinary differential equations, Cambridge University Press, Cambridge, 2004.
 R. E. Williamson, H. F. Trotter: Multivariable mathematics, Prentice Hall (Pearson), Upper Saddle River, 2004.
 B. S. Thomson, J. B. Bruckner, A. M. Bruckner: Elementary real analysis, Prentice Hall (Pearson), Lexington, 2008.

### **Course language:**

Notes:

### Course assessment

Total number of assessed students: 500

rioviues: Ivigi. Jozef Kiserak, FilD., KINDI. Jaroslav Supilla, PilD.									
Provides: Mar Jozef Kisel'ák PhD RNDr Jaroslav Šunina PhD									
9.8 11.6 14.2 22.2 35.8 6.4									
A B C D E FX									

**Date of last modification:** 31.03.2020

Faculty: Faculty of Science         Course ID: ÚINF/ FUN1/15       Course name: Functional 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: 4         Recommended semester/trimester of the course: 5.       Course level: I.         Prerequisities: ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15       Conditions for course completion:         Learning outcomes:       To learn bases of declarative programming (as complementary method to procedural programming) and basic methods of implementations of functional programming languages.         Brief outline of the course:       Principles of functional programming. Lambda calculus from the functional programming language fuaskell: the structure of the language and basic computational rule, basic data types, lists, recursion and induction, trees         Recommended literature:       BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988.         LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/       Course language:         Notes:       Notes:	University: P. J. Ša	afárik Univers	ity in Košice				
Course ID: ÚINF/ FUN1/15       Course name: Functional 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: 4         Recommended semester/trimester of the course: 5.         Course level: 1.         Prerequisities: ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15         Conditions for course completion:         Learning outcomes:         To learn bases of declarative programming (as complementary method to procedural programming) and basic methods of implementations of functional programming languages.         Brief outline of the course:         Principles of functional programming. Lambda calculus from the functional programming language point of view. Properties of functional programming languages.         Recommended literature:         BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988. LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/         Course language:         Notes:	Faculty: Faculty o	f 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: 4 Recommended semester/trimester of the course: 5. Course level: I. Prerequisities: ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15 Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming) and basic methods of implementations of functional programming languages. Brief outline of the course: Principles of functional programming. Lambda calculus from the functional programming languages point of view. Properties of functional programming languages. Programming language Haskell: the structure of the language and basic computational rule, basic data types, lists, recursion and induction, trees Recommended literature: BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988. LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/ Course language: Notes:	Course ID: ÚINF/ FUN1/15Course name: Functional programming						
Number of ECTS credits: 4         Recommended semester/trimester of the course: 5.         Course level: 1.         Prerequisities: ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15         Conditions for course completion:         Learning outcomes:         To learn bases of declarative programming (as complementary method to procedural programming) and basic methods of implementations of functional programming languages.         Brief outline of the course:         Principles of functional programming. Lambda calculus from the functional programming languages point of view. Properties of functional programming languages. Programming language Haskell: the structure of the language and basic computational rule, basic data types, lists, recursion and induction, trees         Recommended literature:         BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988.         LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/         Course language:         Notes:	Course type, scop Course type: Lec Recommended c Per week: 2 / 2 P Course method:	e and the met cture / Practice ourse-load (he er study perio present	hod: ours): od: 28 / 28				
Recommended semester/trimester of the course: 5.         Course level: I.         Prerequisities: ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15         Conditions for course completion:         Learning outcomes:         To learn bases of declarative programming (as complementary method to procedural programming) and basic methods of implementations of functional programming languages.         Brief outline of the course:         Principles of functional programming. Lambda calculus from the functional programming languages point of view. Properties of functional programming languages. Programming language Haskell: the structure of the language and basic computational rule, basic data types, lists, recursion and induction, trees         Recommended literature:         BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988.         LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/         Course language:         Notes:	Number of ECTS	credits: 4					
Course level: I. Prerequisities: ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15 Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming) and basic methods of implementations of functional programming languages. Brief outline of the course: Principles of functional programming. Lambda calculus from the functional programming languages point of view. Properties of functional programming languages. Programming language Haskell: the structure of the language and basic computational rule, basic data types, lists, recursion and induction, trees Recommended literature: BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988. LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/ Course language: Notes:	Recommended set	mester/trimes	ter of the cours	<b>e:</b> 5.			
Prerequisities: ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15         Conditions for course completion:         Learning outcomes:         To learn bases of declarative programming (as complementary method to procedural programming) and basic methods of implementations of functional programming languages.         Brief outline of the course:         Principles of functional programming. Lambda calculus from the functional programming languages point of view. Properties of functional programming languages. Programming language Haskell: the structure of the language and basic computational rule, basic data types, lists, recursion and induction, trees         Recommended literature:         BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988.         LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/         Course language:         Notes:	Course level: I.						
Conditions for course completion: Learning outcomes: To learn bases of declarative programming (as complementary method to procedural programming) and basic methods of implementations of functional programming languages. Brief outline of the course: Principles of functional programming. Lambda calculus from the functional programming languages point of view. Properties of functional programming languages. Programming language Haskell: the structure of the language and basic computational rule, basic data types, lists, recursion and induction, trees Recommended literature: BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988. LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/ Course language: Notes:	Prerequisities: ÚI	NF/PAZ1a/15	and leboÚINF/e	PAZ1a/15			
<ul> <li>Learning outcomes: <ul> <li>To learn bases of declarative programming (as complementary method to procedural programming) and basic methods of implementations of functional programming languages.</li> </ul> </li> <li>Brief outline of the course: <ul> <li>Principles of functional programming. Lambda calculus from the functional programming languages point of view. Properties of functional programming languages. Programming language Haskell: the structure of the language and basic computational rule, basic data types, lists, recursion and induction, trees</li> </ul> </li> <li>Recommended literature: <ul> <li>BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988.</li> <li>LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/</li> </ul> </li> <li>Course language: <ul> <li>Notes:</li> </ul> </li> </ul>	Conditions for co	urse completi	o <b>n:</b>				
Brief outline of the course: Principles of functional programming. Lambda calculus from the functional programming languages point of view. Properties of functional programming languages. Programming language Haskell: the structure of the language and basic computational rule, basic data types, lists, recursion and induction, trees           Recommended literature:           BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988.           LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/           Course language:           Notes:	Learning outcome To learn bases of d and basic methods	es: eclarative prog of implement	gramming (as con ations of functio	nplementary me nal programmir	ethod to procedurang languages.	al programming)	
Recommended literature:         BIRD, R., WADLER, P.: Introduction to Functional Programming. Prentice Hall International, 1988.         LIPOVAČA, M.: Learn You Haskell for Great Good!. Free from http://learnyouahaskell.com/         Course language:         Notes:	<b>Brief outline of th</b> Principles of fun languages point of Haskell: the structu and induction, tree	e course: actional progra Eview. Propert: ure of the langues	amming. Lambo ies of functional lage and basic co	la calculus fro programming la pmputational rul	om the functiona anguages. Program le, basic data types	Il programming nming language s, lists, recursion	
Course language: Notes:	<b>Recommended lit</b> BIRD, R., WADL 1988. LIPOVAČA, M.: I	<b>erature:</b> ER, P.: Introdu Learn You Has	ction to Function kell for Great G	nal Programmin ood!. Free from	ng. Prentice Hall I http://learnyouah	nternational, askell.com/	
Notes:	Course language:						
	Notes:						
Course assessment Total number of assessed students: 250							
A B C D E FX	A	В	С	D	E	FX	
21.6 15.2 15.6 14.4 32.4 0.8	21.6	15.2	15.6	14.4	32.4	0.8	
Provides: prof. RNDr. Stanislav Krajči, PhD., doc. RNDr. Ondrej Krídlo, PhD.	Provides: prof. RN	NDr. Stanislav	Krajči, PhD., do	c. RNDr. Ondre	j Krídlo, PhD.		
Date of last modification: 03.05.2015	Date of last modif	fication: 03.05	.2015				
Approved:	Approved:						

University: P. J.	University: P. J. Šafárik University in Košice						
Faculty: Faculty	of Science						
<b>Course ID:</b> ÚGI GIS/15	E/ Course name: Geographic Information Systems						
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						
Number of ECT	S credits: 6						
Recommended s	semester/trimes	ster of the cours	se: 5.				
Course level: I.,	II.						
Prerequisities:							
<b>Conditions for course completion:</b> 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 points), EV (0.40 points).							
<b>Learning outcomes:</b> 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 language: Slovak or Czech or English							
Notes:							
Course assessment Total number of assessed students: 344							
A	A B 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	Aichaela Nováko	ová			
Date of last mod	lification: 16.09	9.2017					

University: P. J.	. Šafárik Univers	sity in Košice			
Faculty: Faculty	Faculty: Faculty of Science				
<b>Course ID:</b> ÚIN BSSI/15	Course ID: ÚINF/ Course name: Informatics I. BSSI/15				
Course type, sc Course type: Recommended Per week: Per Course metho	ope and the me d course-load (h r study period: d: present	thod: nours):			
Number of EC	<b>FS credits:</b> 4				
Recommended	semester/trime	ster of the cours	e:		
Course level: I.					
<b>Prerequisities:</b> AFJ1b/15,ÚINF	ÚINF/PAZ1b/15 /TVY/15	5,ÚINF/DBS1b/1	5,ÚINF/OSY1/1	5,ÚINF/PSIN/15	,ÚINF/
Conditions for	course complet	ion:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	ge:				
Notes:					
Course assessm Total number of	ent f assessed studer	nts: 63			
А	В	С	D	Е	FX
31.75	28.57	22.22	9.52	7.94	0.0
Provides:					
Date of last mo	Date of last modification: 18.06.2018				
Approved:					

University: P. J. Ša	afárik Univers	sity in Košice			
Faculty: Faculty of	f Science				
<b>Course ID:</b> ÚINF/ ZIV1/16	Course na	ame: Internet of T	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:				
<b>Recommended</b> 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. Safárik University in Košice					
Faculty: Faculty of S	cience				
Course ID: Dek. PF UPJŠ/USPV/13	Course ID: Dek. PFCourse name: Introduction to Study of SciencesUPJŠ/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 asses	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. Šafárik University in Košice						
Faculty: Faculty of	Faculty: Faculty of Science					
<b>Course ID:</b> ÚINF/ UGR1/15	Course na	ame: Introduction	to computer gr	aphics		
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 sen	nester/trimes	ster of the course	e: 3.	_		
Course level: I., II.						
Prerequisities:						
Conditions for cou	rse completi	on:				
<b>Learning outcome</b> To provide the stuc graphics.	s: lents with kn	owledge of graph	nics algorithms	and basic princip	les of computer	
Graphics hardware, drawing 2D primiti spline forms, Bézie perspective and pa Rendering techniq computer animation	input and ou ves. Filling a r curves, B-s arallel projec ues, photore n, virtual real	tput devices. Colo and clipping. Cur plines, surfaces. H ctions. Visible-su alism, textures, ity.	or models, palett ve modeling, in Homogenous courface determina ray tracing, ra	es. Raster graphic terpolations and a ordinates, affine t ation, illuminatio adiosity. Object	es algorithms for approximations, ransformations, n and shading. representations,	
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. RNI	Provides: doc. RNDr. Jozef Jirásek, PhD., RNDr. Rastislav Krivoš-Belluš, PhD.					
Date of last modifi	cation: 03.05	5.2015				
Approved:						

University P I	Šafárik Univers	ty in Košice			
Faculty: Faculty	y of Science				
<b>Course ID:</b> ÚIN UIB1/17	Course ID: UINF/       Course name: Introduction to information security         UIB1/17       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	<b>TS credits:</b> 3				
Recommended	semester/trimes	ster of the cours	<b>e:</b> 3., 5.		
Course level: I.	, N				
Prerequisities:					
Conditions for	course completi	ion:			
Learning outco	omes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	ge:				
Notes:					
Course assessm Total number of	ent f assessed studen	ıts: 56			
А	В	С	D	Е	FX
37.5	37.5	14.29	7.14	1.79	1.79
Provides: RND	r. JUDr. Pavol So	okol, PhD.	<u>I</u>		<u>l</u>
Date of last mo	dification: 27.03	3.2019			
Approved:					

University: P. J	. Šafárik Univ	ersity in Košice				
Faculty: Facult	y of Science					
<b>Course ID:</b> ÚIN UPR1/15	Course ID: ÚINF/ Course name: Introduction to law for informatics UPR1/15					
Course type, sc Course type: I Recommended Per week: 2 / 2 Course metho	ope and the r Lecture / Pract d course-load Per study p d: present	nethod: ice (hours): eriod: 28 / 14				
Number of EC	<b>ΓS credits:</b> 4					
Recommended	semester/trir	nester of the cours	se: 3., 5.			
Course level: I.						
Prerequisities:						
<b>Conditions for</b> Written final ex	course comp am (score at l	etion: east 50%)				
Learning outco To provide theo knowledge in th	<b>mes:</b> retical backgro ne Slovak priv	ound for studying co ate 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 Administr to Tax law to criminal la	f law and legal theo al law ative law	ory			
Recommended (1) Selected slo	literature: vak legislation	1				
Course languag	ge:					
Notes:						
Course assessme Total number of	ent f assessed stud	lents: 12				
А	A B C D E FX					
25.0	25.0 16.67 16.67 16.67 25.0 0.0					
Provides: RND	r. JUDr. Pavol	Sokol, PhD.				
Date of last mo	dification: 14	.01.2020				
Approved:						

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> 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.
Course level: I., II.	
Prerequisities:	
<b>Conditions for cours</b> The condition for pas networks, successful algorithms, as well as	e 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 successful completion of the written and oral part of the exam.
Learning outcomes: The result of the educa 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.
<ul> <li>Brief outline of the c</li> <li>Basic concept arisis</li> <li>calculable by thresho</li> <li>Perceptrons. Linea</li> <li>learning rule, higher of</li> <li>Forward neural method.</li> <li>Recurrent neural renergy function, learn</li> <li>Model of gradually</li> <li>recognition phase, sea</li> <li>Applications of stu</li> <li>Written test I.</li> <li>Motivation to med</li> </ul>	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). r created network. ART network, architecture, operations, initialization phase, arch and adaptation phase. Use of the ART network. Idied models in solving practical problems.
<ol> <li>8. Motivation to mod</li> <li>9. Genetic programm</li> <li>blind algorithm and c</li> <li>10. Genetic and evolu</li> <li>11. Special technique</li> <li>algorithms.</li> <li>12. Use of genetic algorithm</li> </ol>	el genetic elements. Genetic algorithm. Application of genetic algorithms. ing, root trees, Read's linear code. Basic stochastic optimization algorithms: limbing algorithm. Forbidden search method. ationary programming with typing, examples of use. Grammatical evolution. les of evolutionary computations. Selection mechanisms in evolutionary gorithms in training neural networks. Artificial life.
13. Written test II. Recommended litera	ture:

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

University: P. J	. Šafárik Univers	ity in Košice			
Faculty: Facult	y of Science				
<b>Course ID:</b> ÚIN UIN1/15	Course ID: ÚINF/ UIN1/15Course 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:					
<b>Course assessm</b> Total number of	nent f assessed studen	ts: 284			
А	В	С	D	Е	FX
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. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> ÚINF/ PAI1/13	Course name: Legal aspects of informatics
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., 6.
Course level: I.	
Prerequisities:	
<b>Conditions for cours</b> Written final exam (s	core at least 50%)
Learning outcomes: To provide theoretica knowledge in the leg Brief outline of the c (1) Introduction to IC (2) Legal acts	l background for studying computer science in general, by giving the necessary al aspects of information and communications technologies (ICT law). ourse: CT law
<ul> <li>(3) Electronic signatu</li> <li>(4) Electronic common</li> <li>(5) Consumer rights</li> <li>(6) Intelectual proper</li> <li>(7) Privacy and person</li> <li>(8) ISPs and their resonant the second s</li></ul>	res erce ty and software law mal 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 -	<b>ture:</b> nation technology law: the law and society. Oxford University Press; 2013 tion technology law. Oxford University Press; 2017. regulations and directives
<b>Course language:</b>	

Notes:

Course assessment Total number of assessed students: 57						
A B C D E FX						
17.54	22.81	17.54	14.04	21.05	7.02	
Provides: RNDr. JUDr. Pavol Sokol, PhD.						
Date of last modification: 14.01.2020						
Approved:						

University: P. J.	University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science								
<b>Course ID:</b> ÚIN LOP1/15	ourse ID: ÚINF/ Course name: Logic programming OP1/15							
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 EC	ГS cre	edits: 5						
Recommended	seme	ster/trimes	ter of the course	e: 4., 6.				
Course level: I.,	, II.							
Prerequisities:								
Conditions for	cours	e completio	on:					
Learning outco To learn bases o and basic metho	mes: f decla ods of	arative prog implement	ramming (as con ations of logic pr	nplementary me ogramming lan	ethod to procedura guages.	l programming)		
<b>Brief outline of the course:</b> 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.								
<b>Recommended literature:</b> 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 languag	ge:							
Notes:								
Course assessment Total number of assessed students: 284								
А	B C D E FX							
22.18 12.68 14.08 24.3 25.0 1.76								
Provides: doc. RNDr. Ondrej Krídlo, PhD., prof. RNDr. Stanislav Krajči, PhD.								
Date of last modification: 03.05.2015								
Approved:								

University: P I Šafá	rik University in Košice
<b>Faculty:</b> 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:	
<b>Conditions for cours</b> Written quizes, midte	e completion: erm and final exam.
<b>Learning outcomes:</b> Intro to programming	g in MATLAB with focus on its usage in neural and cognitive Science.
<ul> <li>Brief outline of the c</li> <li>1. Intro to Matlab</li> <li>2. Navigation, interact</li> <li>3. Interaction with hu</li> <li>4. Auditory and visua</li> <li>5. Analysis and visua</li> <li>6. Analysis of neurop</li> <li>7. Analysis of neurop</li> <li>7. Analysis of neurop</li> <li>8. Cognitive and neurop</li> <li>9. Auditory modeling</li> <li>10. Visual modeling</li> <li>11. Tools for modeling</li> <li>12. Tools for psychol</li> </ul>	ourse: tion, variables, vectors, matrices, scripts, toolboxes mans in behaviroal experiments il stimulus generation lization of behavioral data whysiological data maging data. ral modeling in Matlab tools tools tools ag of learning ogical experiments
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	Ature: 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
<b>Course language:</b> Slovak or English	
Notes: Content prerequisitie basic programing ski	s: Ils or instructor's consent

<b>Course assessment</b> Total number of assessed students: 8							
A B C D E FX							
25.0	25.0	12.5	37.5	0.0	0.0		
Provides: doc. Ing. Norbert Kopčo, PhD., Ing. Peter Lokša, PhD.							
Date of last modification: 08.07.2021							
Approved:							

University: P. J. Šafá	rik Univers	ity in Košice						
Faculty: Faculty of Science								
Course ID: ÚINF/ 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 cr	edits: 5							
Recommended seme	ester/trimes	ter of the cours	<b>e:</b> 6.					
Course level: I., II.								
Prerequisities:								
<b>Conditions for cours</b> Active attendance at The final project is p	se completi seminars, d artially crea	on: efense of final gi ited on seminars.	roup project.					
Learning outcomes: Ability to design and create dynamic scalable SPA - SIngle Page Application using Angular and Spring Boot.								
<b>Brief outline of the course:</b> - 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								
<ul> <li>Recommended literature:</li> <li>1. web page of framework Angular: https://angular.io/</li> <li>2. web page of Angular Material: https://material.angular.io/</li> <li>3. web page of storage NGXS: https://www.ngxs.io/</li> <li>4. web page of library RXJS: https://rxjs-dev.firebaseapp.com/guide/overview</li> <li>5: Craig Walls: Spring in action. Fifth edition. ISBN: 978-1-61729-494-5. Hanning 2019</li> </ul>								
Course language: slovak								
Notes:								
<b>Course assessment</b> Total number of assessed students: 20								
A	В	С	D	Е	FX			
65.0	0.0	10.0	20.0	5.0	0.0			
Provides: RNDr. Peter Gurský, PhD.								
Date of last modifica	ation: 09.07	2.2021						

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> ÚINF/ OSY1/15	Course name: Operating systems
Course type, scope a Course type: Lectur Recommended cou Per week: 2 Per stu Course method: pre	ind the method: re rse-load (hours): idy period: 28 esent
Number of ECTS cr	edits: 3
Recommended seme	ester/trimester of the course: 3.
Course level: I.	
<b>Prerequisities:</b> ÚINF PRG1/15)	/PRP2/15,(ÚINF/PAZ1a/15 and leboÚINF/ePAZ1a/15 and leboÚINF/
<b>Conditions for cours</b> Test and oral exam	se completion:
Learning outcomes: To gain knowledge a multi-process CPU a	bout the basic architecture of the operating system. Understand algorithms for llocation, interprocess communication, and memory allocation.

To be able to apply basic synchronization procedures and to solve problems of allocation of common resources for I / O operations.

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 assessment Total number of assessed students: 304							
A B C D E FX							
22.37	21.71	19.08	25.0	10.53	1.32		
Provides: RNDr. PhDr. Peter Pisarčík							
Date of last modification: 14.01.2020							
Approved:							

Convestive F. J. Salarik University in Kosice         Faculty: Faculty of Science         Course ID: ÚFV/         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:         Monitoring tests during the calculus lessons         1, in the 6th week         2, in the 12th week         2 in the 12th week         2 in the 12th week         Enal assessment is based on th results of :         - oral examination         assessment of the calculus lessons (written tests, overall performance during the lessons)         Learning outcomes:         Basic knowledge about the mechanics of point mass, system of particles, rigid body, elastic bodies and fluids and gases.         Brief outline of the course:         Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of relativity in the classical mechanics. Gravitation. Mechanics of many-particle systems. The motion of rigid bodies. Deformation, elasticity. Mechanics of fluids and gases.         Recommended literature:         Hajko V, Daniel-Szabó J.: Základy fýziky, VEDA, Bratislava 1983	University D I Čefé	rile University in Kežica
Faculty : raculty of Science         Course ID: ÚFV/ FPU15       Course name: Physics for Informaticists I FPU15         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: 1.         Prerequisities:         Conditions for course completion:         Monitoring tests during the calculus lessons         1. in the 6th week         2.in the 12th week         Final assessment is based on th results of : - oral examination         assessment of the calculus lessons (written tests, overall performance during the lessons)         Learning outcomes:         Basic knowledge about the mechanics of point mass, system of particles, rigid body, elastic bodies and fluids and gases.         Brief outline of the course:         Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of relativity in the classical mechanics. Gravitation. Mechanics of many-particle systems, The motion of rigid bodies. Deformation, elasticity. Mechanics of fluids and gases.         Recommended literature:         Hajko V., Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983.         Veit S., Mad'ar J., Martišovits V.: Vseobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava, 1987. <th>University: P. J. Sala</th> <th></th>	University: P. J. Sala	
Course ID: UFV/       Course name: Physics for Informaticists I         FPI/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: 1.       Prerequisities:         Conditions for course completion:       Monitoring tests during the calculus lessons         1. in the 6th week       1. in the 6th week         2.in the 12th week       Final assessment is based on th results of : - oral examination         assessment of the calculus lessons (written tests, overall performance during the lessons)         Learning outcomes:         Basic knowledge about the mechanics of point mass, system of particles, rigid body, elastic bodies and fluids and gases.         Brief outline of the course:         Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of relativity in the classical mechanics. Gravitation. Mechanics of many-particle systems. The motion of rigid bodies. Deformation, elasticity. Mechanics of fluids and gases.         Recommended literature:         Hajko V, Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983.         Yeis S, Mad'ar J., Martišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava, 1987.         Fuka J., Široká M.: Obecná fyzika	Faculty: Faculty of S	cience
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: 1.         Prerequisities:         Conditions for course completion:         Monitoring tests during the calculus lessons         1. in the 6th week         2.in the 12th week         Final assessment is based on th results of :         - oral examination         assessment of the calculus lessons (written tests, overall performance during the lessons)         Learning outcomes:         Basic knowledge about the mechanics of point mass, system of particles, rigid body, clastic bodies and fluids and gases.         Brief outline of the course:         Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of relativity in the classical mechanics. Gravitation. Mechanics of fluids and gases.         Recommended literature:         Hajko V., Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983.         Yeis Š., Maďar J., Martišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava 1987.         Fuka J., Široká M.: Obecná fyzika I / skriptum /, PF Univ. Palackého, Olomouc 1983.         Hlaikóay, D., Resnic	Course ID: UFV/ FPI/15	Course name: Physics for Informaticists I
Number of ECTS credits: 4 Recommended semester/trimester of the course: 4. Course level: I. Prerequisities: Conditions for course completion: Monitoring tests during the calculus lessons 1. in the 6th week 2. in the 12th week Final assessment is based on th results of : - oral examination assessment of the calculus lessons (written tests, overall performance during the lessons) Learning outcomes: Basic knowledge about the mechanics of point mass, system of particles, rigid body, elastic bodies and fluids and gases. Brief outline of the course: Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of relativity in the classical mechanics. Gravitation. Mechanics of many-particle systems. The motion of rigid bodies. Deformation, elasticity. Mechanics of fluids and gases. Recommended literature: Hajko V., Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983. Veis Š., Maďar J., Martišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava, 1987. Fuka J., Široká M.: Obecná fyzika I / skriptum /, PF Univ. Palackého, Olomouc 1983. Hlavička A., a kol.: Fyzika pre pedagogické fakulty, SPN, Praha 1971. Hajko V., a kol.:Fyzika v prikladoch, ALFA Bratislava 1983. Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 1 Mechanika, VUT Brno, 2000 Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 2 Mechanika - Termodynamika, VUT Brno, 2000 Krempaský J.: Fyzika, ALFA Bratislava 1982. Course language: Slovak Notes:	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
Recommended semester/trimester of the course: 4.         Course level: I.         Prerequisities:         Conditions for course completion:         Monitoring tests during the calculus lessons       1.         1. in the 6th week       2.         Final assessment is based on th results of :       -         - oral examination       assessment of the calculus lessons (written tests, overall performance during the lessons)         Learning outcomes:         Basic knowledge about the mechanics of point mass, system of particles, rigid body, elastic bodies and fluids and gases.         Brief outline of the course:         Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of rigid bodies. Deformation, elasticity. Mechanics of fluids and gases.         Recommended literature:         Hajko V, Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983.         Veis Š., Maďar J., Martišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava, 1987.         Fuka J., Široká M.: Obecná fyzika I / skriptum /, PF Univ. Palackého, Olomoue 1983.         Halvička A., a kol: Fyzika pre pedagogické fakulty, SPN, Praha 1971.         Hajko V., a kol: Fyzika v prikladoch, ALFA Bratislava 1983.         Halvička A., a kol: Fyzika v prikladoch, ALFA Bratislava 1983.         <	Number of ECTS cr	edits: 4
Course level: I.         Prerequisities:         Conditions for course completion:         Monitoring tests during the calculus lessons         1. in the 6th week         2.in the 12th week         Final assessment is based on th results of :         - oral examination         assessment of the calculus lessons (written tests, overall performance during the lessons)         Learning outcomes:         Basic knowledge about the mechanics of point mass, system of particles, rigid body, elastic bodies and fluids and gases.         Brief outline of the course:         Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of rigid bodies. Deformation, elasticity. Mechanics of fluids and gases.         Recommended literature:         Hajko V, Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983.         Veis Š., Maďar J., Martišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava, 1987.         Fuka J., Široká M.: Obecná fyzika I / skriptum /, PF Univ. Palackého, Olomoue 1983.         Halvička A., a kol.: Fyzika pre pedagogické fakulty, SPN, Praha 1971.         Hajko V, a kol.: Fyzika v príkladoch, ALFA Bratislava 1983.         Haliiday, D., Resnick, R., Walker, J.: Fyzika, časť 1 Mechanika, VUT Brno, 2000         Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 2 Mechanika - Termodynamika, VUT Brno, 2000         Krempaský J.: Fyzika, ALFA Bratislava 1982.	Recommended seme	ster/trimester of the course: 4.
Prerequisities:         Conditions for course completion:         Monitoring tests during the calculus lessons         1. in the 6th week         2.in the 12th week         Final assessment is based on th results of :         - oral examination         assessment of the calculus lessons (written tests, overall performance during the lessons)         Learning outcomes:         Basic knowledge about the mechanics of point mass, system of particles, rigid body, elastic bodies and fluids and gases.         Brief outline of the course:         Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of relativity in the classical mechanics. Gravitation. Mechanics of many-particle systems. The motion of rigid bodies. Deformation, elasticity. Mechanics of fluids and gases.         Recommended literature:         Hajko V., Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983.         Veis Š., Maďar J., Martišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava, 1987.         Fuka J., Široká M.: Obecná fyzika I / skriptum /, PF Univ. Palackého, Olomouc 1983.         Hajko V., a kol.: Fyzika pre pedagogické fakulty, SPN, Praha 1971.         Hajko V., Resnick, R., Walker, J.: Fyzika, časť 1 Mechanika, VUT Brno, 2000         Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 2 Mechanika - Termodynamika, VUT Brno, 2000         Krempaský J.: Fyzika, ALFA Bratislava 1982.         Course language:	Course level: I.	
Conditions for course completion:         Monitoring tests during the calculus lessons         1. in the 6th week         2.in the 12th week         Final assessment is based on th results of :         - oral examination         assessment of the calculus lessons (written tests, overall performance during the lessons)         Learning outcomes:         Basic knowledge about the mechanics of point mass, system of particles, rigid body, elastic bodies and fluids and gases.         Brief outline of the course:         Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of relativity in the classical mechanics. Gravitation. Mechanics of many-particle systems. The motion of rigid bodies. Deformation, elasticity. Mechanics of fluids and gases.         Recommended literature:         Hajko V., Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983.         Veis Š., Maďar J., Martišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava, 1987.         Fuka J., Široká M.: Obecná fyzika I / skriptum /, PF Univ. Palackého, Olomouc 1983.         Hlajko V., a kol.: Fyzika v príkladoch, ALFA Bratislava 1983.         Hlajko V., a kol.: Fyzika v príkladoch, ALFA Bratislava 1983.         Hajko V., a kol.: Fyzika, v príkladoch, ALFA Bratislava 1983.         Hlajko V., a kol.: Fyzika, Nalker, J.: Fyzika, časť 1 Mechanika, VUT Brno, 2000         Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 2 Mechanika - Termodynamika, VUT Brno, 2000 </td <td>Prerequisities:</td> <th></th>	Prerequisities:	
Learning outcomes:         Basic knowledge about the mechanics of point mass, system of particles, rigid body, elastic bodies and fluids and gases.         Brief outline of the course:         Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of relativity in the classical mechanics. Gravitation. Mechanics of many-particle systems. The motion of rigid bodies. Deformation, elasticity. Mechanics of fluids and gases.         Recommended literature:         Hajko V., Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983.         Veis Š., Maďar J., Martišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava, 1987.         Fuka J., Široká M.: Obecná fyzika I / skriptum /, PF Univ. Palackého, Olomouc 1983.         Hlavička A., a kol.: Fyzika pre pedagogické fakulty, SPN, Praha 1971.         Hajko V., a kol.:Fyzika v príkladoch, ALFA Bratislava 1983.         Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 1 Mechanika, VUT Brno, 2000         Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 2 Mechanika - Termodynamika, VUT Brno, 2000         Krempaský J.: Fyzika, ALFA Bratislava 1982.         Course language:         Slovak         Notes:	<b>Conditions for cours</b> Monitoring tests duri 1. in the 6th week 2.in the 12th week Final assessment is b - oral examination assessment of the cal	e completion: ng the calculus lessons ased on th results of : culus lessons (written tests, overall performance during the lessons)
<ul> <li>Brief outline of the course:</li> <li>Basic knowledge of the vector algebra. Standards and units. Kinematics. Dynamics. The principle of relativity in the classical mechanics. Gravitation. Mechanics of many-particle systems. The motion of rigid bodies. Deformation, elasticity. Mechanics of fluids and gases.</li> <li>Recommended literature:</li> <li>Hajko V., Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983.</li> <li>Veis Š., Maďar J., Martišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava, 1987.</li> <li>Fuka J., Široká M.: Obecná fyzika I / skriptum /, PF Univ. Palackého, Olomouc 1983.</li> <li>Hlavička A., a kol.: Fyzika pre pedagogické fakulty, SPN, Praha 1971.</li> <li>Hajko V., a kol.:Fyzika v príkladoch, ALFA Bratislava 1983.</li> <li>Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 1 Mechanika, VUT Brno, 2000</li> <li>Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 2 Mechanika - Termodynamika, VUT Brno, 2000</li> <li>Krempaský J.: Fyzika, ALFA Bratislava 1982.</li> <li>Course language:</li> <li>Slovak</li> <li>Notes:</li> </ul>	Learning outcomes: Basic knowledge abo and fluids and gases.	ut the mechanics of point mass, system of particles, rigid body, elastic bodies
<ul> <li>Recommended literature:</li> <li>Hajko V., Daniel-Szabó J.: Základy fyziky, VEDA, Bratislava 1983.</li> <li>Veis Š., Maďar J., Martišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Bratislava, 1987.</li> <li>Fuka J., Široká M.: Obecná fyzika I / skriptum /, PF Univ. Palackého, Olomouc 1983.</li> <li>Hlavička A., a kol.: Fyzika pre pedagogické fakulty, SPN, Praha 1971.</li> <li>Hajko V., a kol.:Fyzika v príkladoch, ALFA Bratislava 1983.</li> <li>Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 1 Mechanika, VUT Brno, 2000</li> <li>Halliday, D., Resnick, R., Walker, J.: Fyzika, časť 2 Mechanika - Termodynamika, VUT Brno, 2000</li> <li>Krempaský J.: Fyzika, ALFA Bratislava 1982.</li> <li>Course language:</li> <li>Slovak</li> </ul>	<b>Brief outline of the c</b> Basic knowledge of th relativity in the classi of rigid bodies. Defor	ourse: ne vector algebra. Standards and units. Kinematics. Dynamics. The principle of cal mechanics. Gravitation. Mechanics of many-particle systems. The motion rmation, elasticity. Mechanics of fluids and gases.
Course language:         Slovak         Notes:	Recommended litera Hajko V., Daniel-Sza Veis Š., Maďar J., Ma Bratislava, 1987. Fuka J., Široká M.: C Hlavička A., a kol.: F Hajko V., a kol.: Fyzil Halliday, D., Resnick 2000 Krempaský J.: Fyzika	hture: bó J.: Základy fyziky, VEDA, Bratislava 1983. artišovits V.: Všeobecná fyzika I., Mechanika a molekulová fyzika, ALFA Obecná fyzika I / skriptum /, PF Univ. Palackého, Olomouc 1983. Gyzika pre pedagogické fakulty, SPN, Praha 1971. ka v príkladoch, ALFA Bratislava 1983. c, R., Walker, J.: Fyzika, časť 1 Mechanika, VUT Brno, 2000 c, R., Walker, J.: Fyzika, časť 2 Mechanika - Termodynamika, VUT Brno, a, ALFA Bratislava 1982.
Notes:	Course language:	
Notes:	Slovak	
	Notes:	

Course assessment Total number of assessed students: 20							
A B C D E FX							
25.0	35.0	25.0	5.0	10.0	0.0		
Provides: doc. RNDr. Zuzana Ješková, PhD.							
Date of last modification: 03.05.2015							
Approved:							
University: P. J.	University: P. J. Šafárik University in Košice						
---	--	---	--	--	---	--	
Faculty: Faculty of Science							
Course ID: ÚFV PPLO/15	7/ 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	<b>FS credits:</b> 2						
Recommended	semester/trime	ster of the cours	e: 3.				
Course level: I.							
Prerequisities:							
<b>Conditions for</b> written exam, pr	<b>course complet</b> resence at the la	ion: boratory practice					
Learning outco Student will ob electronic circu knowledge to do measured result	<b>mes:</b> 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	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		
<b>Recommended</b> Petrovič P.: Elek UPJŠ, Košice 20	<b>literature:</b> ktronika I – Vyb 003. 2. vydanie:	rané obvody čísli Vydavateľstvo U	covej techniky. S PJŠ, Košice, 200	kriptum PF, Edič 96.	čné stredisko		
Course languag	ge:						
Notes:							
Course assessm Total number of	ent Eassessed studer	nts: 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	Date of last modification: 21.09.2015						
Approved:							

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> 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 1 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 trivers, 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 compu- 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,
<b>Recommended litera</b> 1. STALLINGS, Will 978-0-13-410161-3.	iture: iam. Computer Organization and Architecture. Prentice Hall, 2002. ISBN

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

University: P. J. Šaf	árik University in Košice				
Faculty: Faculty of	Faculty: Faculty of Science				
<b>Course ID:</b> ÚINF/ PBS/15	Course name: Pro-seminar to bachelor thesis				
Course type, scope Course type: Pract Recommended cou Per week: 1 Per st Course method: pr	and the method: ice urse-load (hours): udy period: 14 resent				
Number of ECTS c	redits: 1				
Recommended sem	ester/trimester of the course: 4.				
Course level: I.					
Prerequisities:					
<b>Conditions for cour</b> Creating a website a bachelor's thesis assi motivation to select a into the AIS by the t	<b>se completion:</b> 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 a bachelor's thesis. Creation of the bachelor's thesis assignment and its insertion thesis supervisor.				
Learning outcomes Basic knowledge of requirements for sel the bachelor's thesis	: f the principles of creation and structure of bachelor's theses. Criteria and ecting an appropriate bachelor thesis topic. Knowledge about the structure of assignment.				
<b>Brief outline of the</b> 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 comparis 11. Presentation of s 12. Presentation of s 13. Presentation of s	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. of bachelor thesis topics by potential supervisors. d its objectives. chelor thesis. chelor theses. rent types of bachelor theses. final bachelor theses. ny final theses. elected topics of final theses. selected topics of final theses. selected topics of final theses.				
Recommended liter 1. STN 01 6910. Ru 2. STN ISO 2145. D 1997. 3. STN ISO 690. Inf references to inform 4. KATUŠČÁK, Da	<b>ature:</b> les of writing and editing documents. 2011. occumentation. Numbering of sections and subsections of written documents. Cormation and documentation. Instructions for creating bibliographic ation sources and their citation. 2012 niel. 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: P. J. Šafá	rik University in Koš	ice
Faculty: Faculty of S	cience	
<b>Course ID:</b> ÚINF/ OP/14	Course name: Profe	essional experience
Course type, scope a Course type: Practic Recommended course Per week: Per stud Course method: pre	nd the method: ce rse-load (hours): y period: 2t esent	
Number of ECIS cr		2.5
Recommended seme	ster/trimester of the	course: 3., 5.
Course level: 1.		
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 asses	ssed students: 10	
	abs	n
	100.0	0.0
Provides: Mgr. Alexa	nder Szabari, PhD., I	ng. Miron Kuzma, PhD.
Date of last modifica	tion: 03.05.2015	
Approved:		

University: P. J. Šaf	árik University in Košice
Faculty: Faculty of	Science
<b>Course ID:</b> 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: 3.
Course level: I., II.	
Prerequisities:	
<b>Conditions for cour</b> 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.
<ul> <li>Brief outline of the <ol> <li>Installing and set running.</li> <li>Loops, conditions with `gcc` and settin <li>Functions. Staticat </li> <li>Basic I/O function </li> <li>Dynamic memory arrays. Strings and f </li> <li>String manipulativ </li> <li>Working with bin </li> <li>Custom data type </li> <li>Dynamic data stru </li> <li>Additional opera </li> <li>Useful tricks and arrays. </li> <li>Function pointer</li> </li></ol></li></ul>	<b>course:</b> 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 Engli	<b>ge:</b> ish					
Notes:						
Course assessm Total number o	nent f assessed studer	its: 218				
А	В	C D E FX				
34.4	19.27 17.43 14.22 10.55 4.13					
Provides: RNDr. PhDr. Peter Pisarčík, RNDr. Patrik Pekarčík						
Date of last modification: 12.07.2021						
Approved:						

University: P. J. Ša	ărik Universit	y in Košice
----------------------	----------------	-------------

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.

<b>Course language:</b> Slovak language, knowledge of English language is only necessary for reading documentation.				
<b>Notes:</b> Content prerequisite: W	Bdi/15 Web and user int	erface design		
Course assessment Total number of assesse	d students: 23			
abs	n	neabs	Z	
65.22	34.78	0.0	0.0	
Provides: PaedDr. Ján G	uniš, PhD.			
Date of last modificatio	<b>n:</b> 31.08.2021			
Approved:				

# COUDSE INFORMATION I ETTED

	COURSE INFORMATION LETTER
University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> 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: re / 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:	
<b>Conditions for cours</b> 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. ractical finalterm focused on a complex task. ect: Pass the minimal limit of points for category of homeworks (assignments, ts (small exams, midterm). Get at least 42% from the finalterm and pass the points for all graded activities.
Learning outcomes: Get an ability to imploriented programmin	ement basic Java programs and obtain essential knowledge related to object- g.
<ul> <li>Brief outline of the c</li> <li>1. Introduction to Java</li> <li>objects using turtle gr</li> <li>2. For-loops, local var</li> <li>conditions.</li> <li>3. While-loop, return</li> </ul>	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.
<ol> <li>Primitive and referinstance variables.</li> <li>Array of primitive</li> </ol>	values and array of references, simple array algorithms.
<ol> <li>Advanced array alg</li> <li>Exceptions and exc</li> <li>Reading from text</li> <li>Creating class</li> </ol>	ception handling, files and directories, writing to text files. files.
<ul> <li>9. Creating classes, overloading.</li> <li>10. Inheritance and point</li> </ul>	olymorphism.
<ul><li>11. Java Collections</li><li>autoboxing, interface</li><li>12. Access modifiers</li><li>static methods and value</li></ul>	s 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, iriables.
13. Creating and thro	wing exceptions, checked and runtime exceptions, JavaDoc, Maven.
Recommended litera	iture:

# 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:

<b>University:</b> P.	J.	Šafárik	University	in Košice
-----------------------	----	---------	------------	-----------

Faculty: Faculty of Science

Course ID: ÚINF/	<b>Course name:</b> 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	i assessed studen	ts: 1222			
А	В	С	D	Е	FX
13.75	7.53	9.9	19.31	21.52	27.99

**Provides:** RNDr. Zuzana Bednárová, PhD., RNDr. Juraj Šebej, PhD., RNDr. Miroslav Opiela, PhD., Mgr. Antónia Matisová, Mgr. Gabriela Vozáriková

Date of last modification: 31.08.2021

**Approved:** 

University: P. J.	Šafárik	University	/ in	Košice
-------------------	---------	------------	------	--------

Faculty: Faculty of Science

Course ID: ÚINF/	<b>Course name:</b> 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:					
<b>Course assessn</b> Total number o	nent f assessed studen	ts: 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 mo	dification: 09.07	2.2021			
Approved:					

University: P. J.	Šafárik	Univers	ity in Košice			
Faculty: Faculty	of Scie	nce				
<b>Course ID:</b> ÚIN PRO1a/15	IF/ Co	ourse na	ame: Project I.			
Course type, sc Course type: F Recommended Per week: 4 Pe Course method	ope and Practice I course er study d: preser	the met -load (h period: nt	thod: ours): 56			
Number of ECT	ГS credi	its: 4				
Recommended	semeste	r/trimes	ster of the cours	e: 4.		
Course level: I.						
Prerequisities:	1					
<b>Conditions for</b> Activity in exer solving a specif	course c rcises, e ic proble	<b>completi</b> laboratic em. Uplo	on: on of home assign ading a software	gnments. Presen work.	tation of the res	ults achieved in
Learning outco Acquire the wa problems of cor	mes: y of wo nputer sy	orking or ystems a	n a software wo dministration in	rk, communicat all phases of the	tion in a softwar ir life cycle.	re team, solving
Brief outline of Work in a 2-4 m of a mentor from with git in comm	the count nember to n softwat nand lin	rse: eam on f re compa es.	the development, anies. Getting acc	testing of a soft quainted with co	tware product un ntinuous integrat	der the guidance ion and working
Recommended 1. https://www.u 2. https://www.j 3. Study literatu	literatu udemy.co enkins.io re tied to	re: om/cour o/doc/ o the sel	se/ Git & GitHub ected project (acc	- The Complete	e Git & GitHub ient's recommend	dation)
Course languag Slovak or Engli	g <b>e:</b> sh					
Notes: Content prerequ advanced progra	iisities: amming	skills				
Course assessm Total number of	ent assesse	d studen	ts: 106			
А	E	3	С	D	Е	FX
69.81	8.4	49	7.55	10.38	2.83	0.94
Provides: Mgr.	Alexand	er Szaba	ari, PhD., RNDr.	Patrik Pekarčík		
Date of last mo	dificatio	on: 25.03	3.2021			
Approved:						

Faculty: Faculty of Science
Course ID: ÚINF/ PRO1b/15Course name: Project II.
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 4 Per study period: 56 Course method: present
Number of ECTS credits: 4
Recommended semester/trimester of the course: 5.
Course level: I.
Prerequisities:
<b>Conditions for course completion:</b> Presentation of the results achieved in solving a specific problem. Uploading a software work. Preparation of materials for the promotion of the final work.
<b>Learning outcomes:</b> Acquire the way of working on the software work with agile methodology, communication in the software team, solving problems of computer systems administration in all phases of their life cycle.
<b>Brief outline of the course:</b> Work in a 4-5 member team on the development, testing of a software product under the guidance of a mentor from software companies. Improving with continuous integration and working with git in command lines. Software development using Agile methodology.
<ul> <li>Recommended literature:</li> <li>1. https://www.udemy.com/course/ Git &amp; GitHub - The Complete Git &amp; GitHub</li> <li>2. https://www.jenkins.io/doc/</li> <li>3. Study literature tied to the selected project (according to the client's recommendation)</li> <li>4. "What is Agile Software Development?". Agile Alliance. 8 June 2013. Retrieved 4 April 2015.</li> </ul>
Course language: Slovak or english
Notes: Content prerequisities: advanced programming skills
<b>Course assessment</b> Total number of assessed students: 70
A B C D E FX
64.29 11.43 8.57 7.14 2.86 5.71
Provides: Mgr. Alexander Szabari, PhD., RNDr. Róbert Novotný, PhD., RNDr. Patrik Pekarčík
Date of last modification: 25.03.2021

Approved:

University: P. J. Ša	afárik Univers	sity in Košice			
Faculty: Faculty o	f Science				
<b>Course ID:</b> 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	<b>e:</b> 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 a Course type: Practi Recommended cou Per week: Per stud Course method: co	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	edits: 2						
Recommended seme	ester/trimester of the cours	e:					
Course level: I., II.							
Prerequisities:							
<b>Conditions for cour</b> 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 l communication with clients will be improved. anising the cultural and art-oriented events, with e experiences for visitors.					
<ul> <li>Brief outline of the of</li> <li>Brief outline of the of</li> <li>Brief outline of the of</li> <li>Basics of seaside at</li> <li>Morning exercises</li> <li>Pilates and its app</li> <li>Exercises for the state</li> <li>Yoga basics</li> <li>Sport as a part of 17</li> <li>Application of production of production of seas</li> </ul>	course: ourse: aerobics lication in seaside conditions pine leisure time jects of productive spending pple, elderly) side cultural and art-oriented	s of leisure time for different age and social groups d activities in leisure time					
Recommended liter	ature:						
Course language:							
Notes:							
Course assessment Total number of asse	essed students: 41						
	abs	n					
	12.2	87.8					

Provides: Mgr. Agata Horbacz, PhD.

Date of last modification: 15.03.2019

Approved:

Faculty: Faculty of Science         Course ID: ÚFV/ TMS/10       Course name: Secrets of microworld         Course type, scope and the method: Course type: Lecture       Course type: Lecture         Becommended course-load (hours):
Course ID: ÚFV/ TMS/10       Course name: Secrets of microworld         Course type, scope and the method: Course type: Lecture Becommended course-load (hours):
Course type, scope and the method: Course type: Lecture Recommended course-load (hours):
Per week: 2 Per study period: 28 Course method: present
Number of ECTS credits: 3
Recommended semester/trimester of the course: 4., 6.
Course level: I.
Prerequisities:
Conditions for course completion: term project
<b>Learning outcomes:</b> To give a review of the recent results form the elementary particle physics for non-physicists layman level.
<b>Brief outline of the course:</b> Introduction to the topics. Atom, nucleus and the basic forces in Nature. Quarks and classification of elementary particles. Methods and approaches in micro objects research. Contenporary experiments un subnuclear physics - BNL, CERN, JINR Dubna.
<ul> <li>Recommended literature:</li> <li>1.Frank Close: The cosmic onion, Heinemann Educational Books Ltd, 1990</li> <li>2. Ljubimov A., Kiss D.: Vvedenie v experimental'nuju fiziku častic, Dubna, 1999</li> <li>3. J.Žáček: Úvod do fyziky elementárních částic, Karolinum, Praha, 2005</li> <li>4. R. Mackintosh et al. : Jádro - cesta do srdce hmoty, Academia, Praha, 2003</li> </ul>
Course language: slovak
Notes:
Course assessment Total number of assessed students: 67
A B C D E FX
73.13 16.42 10.45 0.0 0.0 0.0
Provides: prof. RNDr. Stanislav Vokál, DrSc., doc. RNDr. Janka Vrláková, PhD.
Date of last modification: 03.05.2015
Approved:

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
<b>Course ID:</b> ÚIN SPG1/15	NF/ Course na	Course name: Seminar on computer graphics			
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	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 EC	<b>FS credits:</b> 3				
Recommended	semester/trimes	ster of the cours	e: 4.		
Course level: I.	, II.				
Prerequisities:	ÚINF/UGR1/15				
<b>Conditions for</b>	course completi	on:			
Learning outco	mes:				
<b>Brief outline of the course:</b> Seminar is connecte to the lecture UGR Introduction to computer graphics. In seminar form students presents actual theoretical and implementation problems. Main goal in interest is oriented to quick algorithms of computer graphics, geometric modelling and realistic drawing of scenes. Knowledge from the lecture UGR and good programmers experience are supposed.					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 41					
А	В	С	D	Е	FX
75.61	12.2	7.32	2.44	0.0	2.44
Provides: RNDr. Rastislav Krivoš-Belluš, PhD., doc. RNDr. Jozef Jirásek, PhD.					
Date of last modification: 03.05.2015					
Approved:					

University: P. J. Šafárik University in Košice				
Faculty: Faculty of Science				
<b>Course ID:</b> 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.				
<b>Prerequisities:</b> ÚINF ePOS2a/15)	/PAZ1a/15,(ÚINF/ZLI/21 and leboÚINF/POS2/15 and leboÚINF/			
<b>Conditions for cours</b> Develop two final pro	e completion: ojects: PowerShell script (Windows) or Shellscript (Linux)			
<b>Learning outcomes:</b> 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 <a href="http://pubs.opengroup.org/onlinepubs/009695399/utilities/xcu\_chap02.html">http://pubs.opengroup.org/onlinepubs/009695399/utilities/xcu\_chap02.html</a>
[4] Steve Parker, Shell Scripting: Expert Recipes for Linux, Bash and more, ISBN: 978-1-1181-6633-8, Wrox 2011

776-1-1161-0055-6, WIOX 2011					
<b>Course langua</b> English	ige:				
Notes:	Notes:				
Course assessment Total number of assessed students: 66					
А	В	С	D	Е	FX
66.67	21.21	3.03	3.03	0.0	6.06
<b>Provides:</b> RNI	Dr. Róbert Novotn	ý, PhD.			
Date of last me	odification: 03.05	.2015			
Approved:					

University: P. J. Šafárik University in Košice Faculty: Faculty of Science
Faculty: Faculty of Science
Course ID: ÚINF/ SWI1a/15Course 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
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.
<b>Brief outline of the course:</b> 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:

University: P. J. Šafárik University in Košice			
Faculty: Faculty of Science			
Course ID: ÚINF/ SWI1b/15Course 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 EC18 credits: 3			
Recommended semester/trimester of the course: 5.			
Prerequisities: UINF/SWIIa/15			
Conditions for course completion:			
<b>Learning outcomes:</b> To learn principles and to developed fundamental skills concerning software modelling, development and implementation.			
<b>Brief outline of the course:</b> 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. Šafárik University in Košice			
Faculty: Faculty of Science			
<b>Course ID:</b> ÚINF/ BZP1a/15	Course name: Special seminar to bachelor thesis		
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: 5.		
Course level: I.			
Prerequisities: ÚINF	7/PBS/15		
<b>Conditions for cours</b> Update of the bachele selected in the bache scientific article of 5 supervisor.	be completion: or thesis website. Presentation of the current state of knowledge for the topic clor'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		
<b>Learning outcomes:</b> Basic knowledge about the procedure and writing of the bachelor's thesis, standards and formal aspects of the bachelor's thesis, the creation of bibliographic references and their citations, tools for creating the database of used literature. Basic knowledge of the content and form of presentation of the current state of knowledge for the topic of the bachelor's thesis. Basic knowledge about the preparation of a scientific 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.

<b>Course language:</b> Slovak or English			
Notes:			
Course assessment Total number of assessed students: 130			
abs	n	neabs	
96.15	3.85	0.0	
Provides: RNDr. Ľubomír Anton	i, PhD.		
Date of last modification: 26.08	2021		
Approved:			

Faculty: Faculty of Science

Course ID: ÚINF/	<b>Course name:</b> 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

<ul><li>4. KATUŠČÁK, Dušan. How to write final and qua</li><li>5. Scientific literature related to the topic of the finat the thesis supervisor.</li></ul>	lification theses. Enigma, 2013 I thesis according to the recommendation of
<b>Course language:</b> Slovak or English	
Notes:	
<b>Course assessment</b> 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/20Course name: Specialize	Course name: Specialized seminar to bachelor thesis		
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 cour	se: 5.		
Course level: I.			
Prerequisities:			
<b>Conditions for course completion:</b> Presentation of related works to student's thesis discussions to theses of other students.	s, presentation of original partial results of thesis,		
<b>Learning outcomes:</b> To study new knowledges in the related area of computer science in the seminar form. To follow current state in the area using conference proceedings and specialized journals.			
Brief outline of the course: Seminar is oriented to an individual work with students which related bachelor or diploma theses.			
<b>Recommended literature:</b> Special and research literature connected to bachelor thesis according to recommendations of supervisor.			
Course language: Slovak or english			
Notes:			
Course assessment Total number of assessed students: 13			
abs	n		
100.0	0.0		
<b>Provides:</b> 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 modification: 09.07.2021			
Approved:			

University: P. J. Šafárik University in Košice			
Faculty: Faculty of Science			
Course ID: ÚINF/ SSBb/20Course name: Specialized ser	Course name: Specialized seminar to bachelor thesis		
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			
<b>Recommended semester/trimester of the course:</b> 6			
Course level: I.			
Prerequisities:			
<b>Conditions for course completion:</b> Presentation of related works to student's thesis, prediscussions to theses of other students.	esentation of original partial results of thesis,		
<b>Learning outcomes:</b> To study new knowledges in the related area of computer science in the seminar form. To follow current state in the area using conference proceedings and specialized journals.			
Brief outline of the course: Seminar is oriented to an individual work with students which related bachelor or diploma theses.			
<b>Recommended literature:</b> Special and research literature connected to bachelor thesis according to recommendations of supervisor.			
Course language: Slovak or english			
Notes:			
Course assessment Total number of assessed students: 15			
abs	n		
100.0	0.0		
<b>Provides:</b> 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 modification: 09.07.2021			
Approved:			

University: P. J. Šafá	rik University in Košice				
Faculty: Faculty of S	cience				
<b>Course ID:</b> ÚTVŠ/ TVa/11	Course name: Sports Activities I.				
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: cor	and the method: ce rse-load (hours): ady period: 28 mbined, present				
Number of ECIS cr	edits: 2				
Recommended seme	ster/trimester of the course: 1.				
Course level: I., I.II.,	Ш				
Prerequisities:					
<b>Conditions for cours</b> Min. 80% of active p	articipation in classes.				
Learning outcomes: Sports activities in all They have a great im enables students to s improve.	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				
<b>Brief outline of the c</b> 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	<b>course:</b> ourse: mubject, 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. sters 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 pogram 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	0.08	0.0	0.0	0.0	0.04	8.1	4.77		
<b>Provides:</b> 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. Šafáril	c University i	n Košice						
---	---------------------------	--------------------------------------	---------------	------------	-------	-------	-------		
Faculty: Fa	culty of Sci	ence							
<b>Course ID:</b> TVb/11	ÚTVŠ/	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 cred	lits: 2							
Recommen	ded semest	er/trimester	of the cours	e: 2.					
Course leve	e <b>l:</b> I., I.II., II	[.							
Prerequisit	ies:								
Conditions active partic	for course cipation in c	<b>completion:</b> classes - min.	80%.						
<b>Learning outcomes:</b> 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.									
<b>Brief outline of the course:</b> 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 asse Total numb	essment er of assess	ed students: 1	1675						
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: Fa	culty of Scie	ence					
<b>Course ID:</b> TVc/11	ÚTVŠ/ C	ourse name:	Sports Acti	vities III.			
Course typ Course tyj Recomme 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 credi	its: 2					
Recommen	ded semeste	er/trimester	of the cours	<b>e:</b> 3.			
Course leve	e <b>l:</b> I., I.II., II.						
Prerequisit	ies:						
<b>Conditions</b> min. 80% c	for course of active part	<b>completion:</b> icipation 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.							
<b>Brief outline of the course:</b> 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 asso Total numb	essment er of assesse	ed students: 7	873				
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 i	n Košice				
Faculty: Fa	culty of Scie	ence					
<b>Course ID:</b> TVd/11	ÚTVŠ/ C	ourse name	: Sports Acti	vities IV.			
Course typ Course tyj Recomme 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	<b>e:</b> 4.			
Course leve	el: I., I.II., II	•					
Prerequisit	ies:						
<b>Conditions</b> min. 80% o	<b>for course</b> of active part	<b>completion:</b> icipation in c	lasses				
<b>Learning outcomes:</b> 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.							
<b>Brief outline of the course:</b> 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 asso Total numb	essment er of assesse	ed 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: Facult	y of Science				
Course ID: ÚIN SVK1/15	NF/ Course na	ame: Student scie	entific conference	e	
Course type, sc Course type: Recommended Per week: Per Course metho	cope and the me d course-load (h r study period: d: present	thod: ours):			
Number of EC	IS credits: 4				
Recommended	semester/trime	ster of the cours	<b>e:</b> 6.		
<b>Course level:</b> I.	, II.				
Prerequisities:					
Conditions for	course complet	ion:			
Learning outco	omes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	Course language:				
Notes:	Notes:				
Course assessment Total number of assessed students: 182					
А	В	С	D	Е	FX
100.0	100.0 0.0 0.0 0.0 0.0 0.0				
Provides:					
Date of last mo	Date of last modification: 03.05.2015				
Approved:					

University: P. J. Šafá	rik University in Košice
<b>Faculty:</b> 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): ly period: 36s esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course:
Course level: I., II.	
Prerequisities:	
<b>Conditions for course</b> Conditions for course Attendance Final assessment: Ra	e completion: 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.
<ul> <li>Brief outline of the c</li> <li>Brief outline of the c</li> <li>Brief outline of the c</li> <li>1. Assessment of diff</li> <li>2. Safety rules for raf</li> <li>3. Setting up a crew</li> <li>4. Practical skills trai</li> <li>5. Canoe lifting and c</li> <li>6. Putting the canoe i</li> <li>7. Getting in the canoe</li> <li>8. Exiting the canoe o</li> <li>9. Taking the canoe o</li> <li>10. Steering</li> <li>a) The pry stroke (on</li> <li>b) The draw stroke</li> <li>11. Capsizing</li> <li>12. Commands</li> </ul>	ourse: ourse: iculty of waterways ting 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. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> 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 cr	edits: 2
Recommended seme	ster/trimester of the course:
Course level: I., II.	
Prerequisities:	
<b>Conditions for cours</b> 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 far 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.
<ul> <li>Brief outline of the c</li> <li>Brief outline of the c</li> <li>Brief outline of the c</li> <li>Lectures: <ol> <li>Principles of behave</li> <li>Preparation and lead</li> <li>Objective and subjic</li> <li>Principles of hygic</li> <li>Exercises: <ol> <li>Movement in terrat</li> <li>Preparation of imp</li> <li>Water treatment and</li> </ol> </li> </ol></li></ul>	ourse: Durse: Viour and safety for movement and stay in unknown mountains adership of tour ective danger in mountains one and prevention of damage to health in extreme conditions in, orientation and navigation in terrain (compasses, GPS) rovised overnight stay ad food preparation.
Recommended litera	iture:
Course language:	
Notes:	

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

University: P. J.	Šafárik Univer	sity in Košice				
Faculty: Faculty	y of Science					
Course ID: ÚIN SLO1a/15	IF/ Course r	ame: Symbolic lo	ogic			
Course type, sc Course type: I 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					
Number of EC	<b>FS credits:</b> 5					
Recommended	semester/trim	ester of the cours	e: 4.			
<b>Course level:</b> I.,	, II					
Prerequisities:						
Conditions for	course comple	tion:				
Learning outco To understand provability, satis	<b>Learning outcomes:</b> To understand basic notions of sentence and predicate logic - sentence, sentence scheme, provability, satisfiability, term, formula.					
Brief outline of Predicate logic	<b>Brief outline of the course:</b> Predicate logic – logic language, syntax and semantics, term, formula. Axioms, proof, provability. Interpretation, truth, model. Correctness of the predicate logic.					
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 language:						
Notes:						
Course assessment Total number of assessed students: 405						
А	В	C	D	Е	FX	
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 mo	dification: 03.0	05.2015				
Approved:						

University: P. J.	Šafárik Univers	ity in Košice			
Faculty: Faculty	of Science				
<b>Course ID:</b> ÚINI SLO1b/15	F/ <b>Course n</b> a	me: Symbolic lo	gic		
Course type, sco Course type: Le 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				
Number of ECT	S credits: 5				
Recommended s	emester/trimes	ster of the course	e: 5.		
Course level: I., I	II.				
Prerequisities: Ú	JINF/SLO1a/15				
Conditions for co	ourse completi	on:			
<b>Learning outcon</b> To understand ba	<b>Learning outcomes:</b> To understand basic notions of predicate logic – inductive strutures, completeness.				
Brief outline of t Boolean algebras	<b>Brief outline of the course:</b> Boolean algebras. Syntactic model, completeness of predicate logic. Inductive structures in general.				
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 language:					
Notes:					
Course assessment Total number of assessed students: 70					
А	В	С	D	Е	FX
28.57	12.86	25.71	4.29	11.43	17.14
Provides: prof. RNDr. Stanislav Krajči, PhD., doc. RNDr. Ondrej Krídlo, PhD.					
Date of last modification: 03.05.2015					
Approved:					

University, F. J. Salarik University in Rusice	University:	P. J.	Šafárik	University	v in Košice
--	-------------	-------	---------	------------	-------------

Faculty: Faculty of Science

Course ID: ÚINF/	Course name: System programming
SPR1a/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: 6.

Course level: I., II.

Prerequisities: ÚINF/JAC1/15,ÚINF/OSY1/15

Conditions for course completion:

Executing periodic home-made tasks and developing specific final project.

#### Learning outcomes:

Gain knowledge of architectures AVR, ARM and x86 and low-level API in the Linux operating system kernel. Gain knowledge about the ecosystem of IoT.

#### **Brief outline of the course:**

C-language development and debugging tools; programming microcontrollers: GPIO, interruptions, low-level communication, DMA, timers, ADC; building IoT ecosystem; programming in Linux: system calls and glibc, processes and threads, memory management, file system management, interprocess communication (IPC); synchronization techniques; encrypted communication; virtual file systems.

#### **Recommended literature:**

1. ZHU, Yifeng. Embedded Systems with Arm Cortex-M Microcontrollers in Assembly Language and C. Third Edition. New York, United States: E-Man Press, 2017. ISBN 9780982692660.

2. NOVIELLO, Carmine. Mastering STM32. Victoria, British Columbia, Canada: Leanpub. 2018.

3. ESP8266 RTOS SDK Programming Guide. Espressif Documentation [online]. Dostupné z: https://docs.espressif.com/projects/esp8266-rtos-sdk/en/latest/get-started/index.html.

4. The FreeRTOS Reference Manual: API Functions and Configuration Options. FreeRTOS Documentation [online]. 2017. Dostupné z: https://www.freertos.org/Documentation/RTOS\_book.html.

5. SILBERSCHATZ, Abraham, Peter B. GALVIN a Greg GAGNE. Operating System Concepts. 10th Revised edition. New York, United States: John Wiley, 2021. ISBN 9781119800361.

#### **Course language:**

Slovak or English

Notes:

Course assessment Total number of assessed students: 154							
A B C D E FX							
55.84	20.13	15.58	0.65	7.14	0.65		
Provides: RNDr. PhDr. Peter Pisarčík							
Date of last modification: 12.07.2021							
Approved:							

University: P. J.	Šafárik Univers	ity in Košice				
Faculty: Faculty of Science						
<b>Course ID:</b> ÚIN ZPIa/18	rse ID: ÚINF/ Course name: Thesis in informatics /18					
Course type, sc Course type: Recommended Per week: Per Course method	ope and the met I course-load (h • study period: d: present	thod: ours):				
Number of EC	somoston/trimos	ston of the cours	a <b>.</b> 5			
Course level: I		ster of the cours	<b>e:</b> 5.	-		
Course level: 1.						
Frerequisities:	annes completi					
Conditions for a	course completi	on:				
Learning outco						
Brief outline of	the course:					
Recommended	literature:					
Course languag	ge:					
Notes:						
Course assessm Total number of	ent fassessed 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. Jur RNDr. Stanislav RNDr. Rastislav RNDr. Csaba Tö Patrik Pekarčík, Date of last mod	r. Peter Gurský, l aj Šebej, PhD., I Krajči, PhD., do Krivoš-Belluš, l orök, CSc., RND RNDr. Viliam K dification: 17.06	PhD., RNDr. Mir RNDr. Tomáš Ba oc. RNDr. Ondrej PhD., MSc. Teréz r. JUDr. Pavol So ačala, PhD., doc 5.2018	oslav Opiela, Ph jtoš, RNDr. Zuza Krídlo, PhD., R zia Mézešová, M okol, PhD., doc. I . RNDr. Gabriela	D., RNDr. Ľubor na Bednárová, F NDr. František ( gr. Alexander Sz ing. Norbert Kop Andrejková, CS	mír Antoni, PhD., prof. Galčík, PhD., zabari, PhD., doc. Dčo, PhD., RNDr. Sc.	
Approved:						

University: P. J. Šafárik University in Košice						
Faculty: Faculty of Science						
<b>Course ID:</b> ÚIN ZPIb/18	NF/ <b>Course name:</b> 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	<b>FS credits:</b> 2					
Recommended	semester/trimes	ster of the cours	<b>e:</b> 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 languag	ge:					
Notes:						
Course assessm Total number of	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						
<b>Provides:</b> 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
<b>Course ID:</b> ÚINF/ TYS1/15	Course name: Typographical 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): idy period: 28 esent
Number of EC18 cr	edits: 2
Recommended seme	ster/trimester of the course: 4., 6.
Course level: I.	
Prerequisities:	
<b>Conditions for cours</b>	se completion:
Learning outcomes: To provide the bas mathematical formula	sic information on principles for typesetting of documents containing as in Plain TeX, AMS-TeX, and LaTeX.
Brief outline of the c Typesetting of a plain text and footnote com of mathematical form Making tables and Contents, bibliograph	ourse: n text, special text symbols, using of text fonts. TeX macros. Enumerations in mand. 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	iture:
1. D. E. Knuth, The J Massachusetts 1986	TeXbook, Computers and Typesetting, Addison-Wesley, Reading,
<ol> <li>M. Doob, Jemný ú</li> <li>TeX" (text vo¾ne prí</li> <li>O. Ulrych, AMS-T</li> </ol>	vod do TeXu, CSTUG, 1990; èeský preklad z "A Gentle Introduction to istupný v CTAN archíve). TeX za 59 minút, (verzia 1.0), Praha, 1989.
4. J. Chlebíková, AM	IS-TeX (verzia 2.0), Bratislava, 1992.
<ol> <li>M. Spivak, The Jo</li> <li>L. Lamport, LaTe</li> <li>L. Lamport, Make</li> </ol>	y of TeX, Amer. Math. Soc., 1986. K: A Document Preparation System, Addison-Wesley, Massachusetts, 1986. Index: An index processor for LaTeX, 17 February 1987.
8. J. Rybieka, LaTeX 9. H. Partl, E. Schleg 10. T. Oetiker, H. Par	pro začátečníky, Konvoj, Brno, 1995. l, I. Hyna, P. Sýkora, LaTeX – Stručný popis. tl, I. Hyna, E. Schlegl, M. Kocer, P. Sýkora, Ne příliš stručný úvod do aboli LaTaX2a v 73 minutách)
11. M. Goossens, F. M. Reading Massachuse	Wittelbach, and A. Samarin, The LaTeX Companion, Addison-Wesley, etts 1994 Kapitola 8 je 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	<b>D:</b> ÚINF/ <b>Course name:</b> 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:						
<b>Conditions for cours</b> - 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 Ut (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 prk interfaces partitions					
Recommended litera (1) LPIC-1 Linux Pro 102-400 4th Edition (2) The Linux Docun (3) The Linux Comm	nture: Defessional Institute Certification Study Guide Exam 101-400 and Exam nentation Project (https://www.tldp.org/) nand Line, 2nd Edition: A Complete Introduction 2nd Edition					
Course language:						

Notes:

Course assessment Total number of assessed students: 113							
A B C D E 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:							