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UDSE INFODMATION I ETTED

	CL	JUKSE INFORM	MATION LET I	ER				
University: P. J	. Šafárik Univers	sity in Košice						
Faculty: Facult	y of Science							
Course ID: KF, AFS/05	Course ID: KF/ Course name: Ancient Philosophy and Present Times							
Course type, so Course type: Recommende Per week: 2 P Course metho	cope and the me Practice d course-load (h er study period: od: present	thod: nours): : 28						
Number of EC	TS credits: 2							
Recommended	semester/trimes	ster of the cours	e: 2.					
Course level: I	[.							
Prerequisities:								
When impleme 40% - continuo 60% - final test KF citation star In the case of a philosophical to deadline, will b to the same exte	nting the subject us assessment of , or seminar pape ndard for seminar a transition to dis exts and process be assigned point ent as in the face	in the classical - Student activity er in the range of r and qualificatio stance education, ing the task in w s (partial assessed -to-face form tea	face-to-face - for at seminars, parti 210 A4 standard n papers. students will be vritten form, which nent) and at the e ching.	rm of teaching: ial seminar work pages (with com assigned sub-tas ch must be subn end will prepare	- assignment. pliance with the sks for studying nitted by the set a seminar paper			
Learning outco	omes:							
Brief outline of Point out the ro the 3 pillars of H the interconnect of the issues of society, where which Europe a and problems of today's form of	the course: ots of Western cir European culture, etedness of ancien thought formation the emergence of and European hum of today if he disc Society, thinking	vilization that go , reveal the origin nt philosophy an on, the relationsl f mathematical n manity stand. Th covers the founda g, science and cul	back to the Greek s of democracy and d EPISTEME with hip between philo atural science in e student will be ttions and context ture.	ks. The ancient C nd critical thinkir ill enable a bette osophy and scien the 17th century able to understan ts leading to serie	Areeks, as one of ng. Emphasizing r understanding nce, and modern r is the pillar on nd the questions ous questions of			
Recommended	literature:							
Course languag	ge:							
Notes:								
Course assessn Total number o	nent f assessed studen	nts: 31						
А	В	C	D	Е	FX			
80.65	6.45	6.45	0.0	6.45	0.0			
	· · · · · · · · · · · · · · · · · · ·	•	•	•	A			

Provides: doc. PhDr. Peter Nezník, CSc.

Date of last modification: 24.08.2022

University: P. J.	. Šafárik Univers	ity in Košice					
Faculty: Faculty	Faculty: Faculty of Science						
Course ID: ÚIN ADA/19	Course ID: ÚINF/ Course name: Applications of data analysis ADA/19						
Course type, sc Course type: I Recommended Per week: 2 / 2 Course metho	cope and the met Lecture / Practice d course-load (h 2 Per study peri d: present	thod: e ours): od: 28 / 28					
Number of EC	I'S credits: 5						
Recommended	semester/trimes	ster of the cours	e: 2.				
Course level: II	-						
Prerequisities:							
Conditions for	course completi	on:					
Learning outco	omes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	ge:						
Notes:				_			
Course assessm Total number of	nent f assessed studen	its: 2					
А	В	С	D	Е	FX		
0.0	50.0	50.0	0.0	0.0	0.0		
Provides: doc. Mgr. Michal Gallay, PhD., doc. Ing. Norbert Kopčo, PhD., doc. RNDr. Peter Pristaš, CSc., RNDr. Jana Kisková, PhD., doc. RNDr. Ján Kaňuk, PhD.							
Date of last mo	dification: 08.07	7.2021					
Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.							

University: P. J. Šafárik U	University in Košice
Faculty: Faculty of Science	ce
Course ID: ÚMV/ Cou ATG/13	Irse name: Applied graph theory
Course type, scope and t Course type: Lecture / P Recommended course-le Per week: 2 / 1 Per stud Course method: present	he method: ractice oad (hours): y period: 28 / 14
Number of ECTS credits	: 5
Recommended semester/	trimester of the course: 1.
Course level: II.	
Prerequisities:	
Conditions for course con To complete the course, theorems from the lectur problems based on the pre The exam takes written for practical nature; the maxi is necessary to obtain mor is evaluated by FX), while C for 70-79, B for 80-89 a	mpletion: it is necessary to demonstrate the ability to formulate definitions and ed material, to demonstrate the proofs of theorems and solve selected esented areas of graph theory. orm by elaborating a test containing several questions of a theoretical and mum number of points that can be obtained is 100. To pass the exam, it re than half of the maximum number of 100 points (otherwise the exam e the rating E is given in the case of points 51-59, D in the case of 60- 69, and A for over 90 points.
Learning outcomes: After completing the cour the natural and technical s	se, the student is acquainted with selected applications of graph theory in sciences and mathematical properties of related graph concepts.
Brief outline of the cours Week 1: Working with gra Weeks 2 - 4: Practical pr allocation); common type heuristics for graph colori Weeks 5 - 7: Polynomial of their properties and efficie Weeks 8 - 10: Basics of co Weeks 11 - 13: Chemical g	aphs in computer algebra systems Maple and Wolfram Mathematica. roblems leading to the use of graph coloring (scheduling and resource es of graph colorings for practice and their properties; algorithms and ng. cases of NP-complete graph problems (the most important graph classes, ent algorithms for calculating selected invariants) omplex network analysis (centrality, community structure) graph theory (Wiener index and its properties, related topological indices)
Recommended literature U. Brandes, T. Erlebach: 1	: Network analysis. Methodological Foundations, Springer, 2005.
Course language: Slovak or English	
Notes: Intermediate knowledge of basics of working with co	of graph theory and general programming is assumed, as well as the mputer algebra systems.

Course assessment								
Iotal number o	f assessed studen	ts: 21						
A B C D E FX								
14.29	38.1	23.81	9.52	14.29	0.0			
Provides: prof. RNDr. Tomáš Madaras, PhD.								
Date of last modification: 14.04.2022								
Approved: prot	Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.							

University: P. J. Šafá	rik University in Košice						
Faculty: Faculty of Science							
Course ID: ÚINF/ APA1/21	Course name: Approximation algorithms						
Course type, scope a Course type: Lectur Recommended cour Per week: 3 Per stu Course method: pre	nd the method: e rse-load (hours): dy period: 42 esent						
Number of ECTS cr	edits: 5						
Recommended seme	ster/trimester of the course: 3.						
Course level: II.							
Prerequisities:							
Conditions for cours Continuous assessme continuous written te Oral final exam.	e completion: nt is awarded on the basis of the quality of homework given in lectures and st.						
Learning outcomes: To learn basic conce error probability.	ptions of randomized algorithms and to classify the algorithms due to their						
 Brief outline of the c 1. Basic notions of Ph 2. Basic randomized 3. Las Vegas algorith 4. One sided error Me 5. Two sided boundee 6. Two sided unbounder 7. Classes of random them. 8. Optimisation problemisation 9. Special optimisation 10. Classification of endinemisation 11. FPTAS. 12. PTAS. 13. TSP problem and 14. Unapproximability 	ourse: robability Theory. computing models and its characterisations. ms. onte Carlo algorithms. d error Monte Carlo algorithms. ized algorithms with polynomial time complexity and relationships between em, approximation algorithm, relative error, approximation ratio. on problems and approximation solutions. optimisation problems based upon their approximations. its relaxations. y.						
Recommended litera Hromkovič, J.: Algor Randomization, Appr Hromkovič, J.: Comr In: Handbook on Rar Kluwer Publ., 2001.	iture: ithmics for Hard Problems, Introduction to Combinatorial Optimization, roximation, and Heuristics, Springer=Verlag 2004. nunication Protocols - An Exemplary Study of the Power of Randomness. idomized Computing, P.Pardalos, S.Rajasekaran, J.Reif, J.Rolim, Eds.,						

Hromkovič, J.: Design and analysis of ranodmized algorithms. Springer-Verlag, 2005.

Hromkovič, J.: Einführung in die algorithmischen Konzepte der Informatik, Teubner, 2001. Motwani R. and Raghavan P.: Randomized Algorithms. Cambridge University Press 1995. Mitzenmacher M. and Upfal P.: Probability and Computing: Randomized Algorithms and Probabilistic Analysis. Cambridge University Press 2005.

Course language:

Slovak or English

Notes:

content prerequisites: basics of probability, basics of algorithms and data structures

Course assessment

Total number of assessed students: 95

А	В	С	D	Е	FX
24.21	13.68	23.16	15.79	22.11	1.05

Provides: doc. RNDr. Ondrej Krídlo, PhD.

Date of last modification: 23.11.2021

University: P. J. Šafá	rik University in Košice						
Faculty: Faculty of Science							
Course ID: ÚINF/ PSDU/16	Course name: Case studies in data mining						
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 2 Per Course method: pre	nd the method: e / Practice rse-load (hours): study period: 28 / 28 sent						
Number of ECTS cr	edits: 4						
Recommended seme	ster/trimester of the course: 1.						
Course level: II.							
Prerequisities:							
Conditions for cours The realization of a p Successful completion mining.	e completion: roject focused on case studies in data mining. n of the written and oral part of the exam focused on case studies in data						
Learning outcomes: Solving practical task data mining methods	as in the field of data mining. Basic concepts of data mining. Knowledge of						
Brief outline of the c 1. Basic notions in da 2. Data preparation in 3. Methods and algor 4. Methods and algor 5. Extraction of know 6. Case study analysi 7. Case study analysi 8. Application of met 9. Solving practical ta 10. Solving practical 11. Solving practical 12. Testing data mini 13. Testing data mini	ta mining data mining ithms of data mining ithms of data mining II deldge from large data volumes s using data mining methods in different application areas s using data mining methods in different application areas II hods for automated analysis of large data volumes asks using appropriate software tools tasks using appropriate software tools II tasks using appropriate software tools III ng algorithms ng algorithms II						
Recommended litera [1] Watt, J., Borhani, and applications. Car [2] Zhao, Y., Cen, Y.: [3] Han, J. and Kamb	ture: R., Katsaggelos, A.K.: Machine learning refined: foundations, algorithms, nbridge: Cambridge University Press, 2016. Data Mining Applications with R. Elsevier Inc. 2014. er, M.: Data Mining Concepts and Techniques. 3rd Edition, Morgan						

Kaufmann, Burlington, 2011.

[4] Witten, I.E., Frank, E.: Data Mining: Practical Machine Learning Tools and Techniques, Elsevier, 2005.

Course language: Slovak or English								
Notes:								
Course assessment Total number of assessed students: 25								
А	В	С	D	Е	FX			
100.0	00.0 0.0 0.0 0.0 0.0 0.0							
Provides: RNDr. Erik Bruoth, PhD., doc. RNDr. L'ubomír Antoni, PhD.								
Date of last modification: 14.11.2021								
Approved: pro:	f. RNDr. Gabriel	Semanišin, PhD.	, prof. RNDr. Iva	n Žežula, CSc.				

University: P. J	University: P. J. Šafárik University in Košice						
Faculty: Facult	y of Science						
Course ID: KF/ KDF/05	/ Course name: Chapters from History of Philosophy of 19th and 20th Centuries (General Introduction)						
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	TS credits: 2						
Recommended	semester/trimes	ster of the cours	e: 2.	=			
Course level: II	- 						
Prerequisities:							
Conditions for	course completi	on:					
Learning outco	omes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	ge:						
Notes:							
Course assessm Total number of	Course assessment Total number of assessed students: 10						
A	В	С	D	Е	FX		
50.0	50.0 20.0 10.0 0.0 10.0 10.0						
Provides: PhDr. Dušan Hruška, PhD.							
Date of last mo	Date of last modification: 03.05.2015						
Approved: prof	f. RNDr. Gabriel	Semanišin, PhD.	, prof. RNDr. Iva	an Žežula, CSc.			

University: P. J. Šafárik University in Košice					
Faculty: Faculty of S	Science				
Course ID: ÚINF/ KKV1/21Course name: Classical and quantum computations					
Course type, scope a Course type: Lectu Recommended cou Per week: 3 / 2 Per Course method: pr	Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 3 / 2 Per study period: 42 / 28 Course method: present				
Number of ECTS credits: 6					
Recommended semester/trimester of the course: 3.					

Course level: II., N

Prerequisities:

Conditions for course completion:

Successful completion of the subject is conditioned by proper acquisition of basic concepts, algorithms and models and demonstrating the ability to apply them creatively. The acquisition of knowledge takes place:

- continuously during the semester in the form of partial assignments,
- a written test during the semester,
- a written test at the exam,
- oral exam.

In order to receive an evaluation, it is necessary to obtain at least 50% of points from each of the three parts (assignments during the semester, written part of the exam, oral part of the exam). The detailed evaluation method is published in the AIS.

Learning outcomes:

By completing the subject, the student will get:

- knowledge of the classification and design of probabilistic algorithms,

- basic knowledge of the principles of quantum computers and their differences compared to classical computing models,

- knowledge and skills about the design and functioning of quantum computing and become familiar with the most well-known algorithms,

= basic quantum computer programming skills.

Brief outline of the course:

1. Introduction to quantum quantum computers. Basics of classical complexity theory.

- 2. Boolean circuits and their basic properties.
- 3. Probability algorithms.
- 4. BPP class and probability testing.
- 5. Basic properties of circuits and Fermat's test.
- 6. Miller Rabin's test and the position of the BPP class in the hierarchy of complexity models.
- 7. Introduction to quantum computing and mathematical foundations of quantum theory.
- 8. Spectral representation of self-adjoint operators.
- 9. Quantum states and Hilbert vector spaces.
- 10. Basic quantum operators and basic quantum algorithms.

- 11. Quantum teleportation, superdense coding and Grover's algorithm.
- 12. Fourier transformation.
- 13. Shor's algorithm.

Recommended literature:

1. BERMAN,G.P., DOOLEN,G.D., MAINIERI, R., TSIFRINOVIC, V.I. Introduction to Quantum Computers. World Scientific, 2003.

2. GRUSKA, J. Quantum Computing. McGraw-Hill, 1999.

3. JOHNSON, G. A Shortcut Through Time: The Path to the Quantum Computer, Knopf 2003.

4. KITAEV, A.Y., SHEN, A.H., VYALYI, M.N. Classical and Quantum Computation. American Mathematical Society, 2002.

5. NIELSEN, M.A., CHUANG, I.L. Quantum Computation and Quantum Information.

Cambridge University Press, 2000.

6. HIRVENSALO, M., Quantum Computing, Springer 2004

Course language:

Slovak or english

Notes:

Content prerequisites:

Linear algebra, Group theory, Probability theory, Theory of algorithms, Introduction to quantum computers.

Course assessment

Total number of assessed students: 83

А	В	С	D	Е	FX
26.51	40.96	15.66	4.82	2.41	9.64

Provides: prof. RNDr. Gabriel Semanišin, PhD., RNDr. Marek Semjan

Date of last modification: 25.07.2022

	COURSE INFORMATION LETTER					
University: P. J. Šafárik	University in Košice					
Faculty: Faculty of Scie	Faculty: Faculty of Science					
Course ID: ÚINF/ C KMU1/15	Course ID: ÚINF/ KMU1/15Course name: Coding and multimedial data transition					
Course type, scope and Course type: Lecture / Recommended course Per week: 2 / 1 Per stu Course method: prese	l the method: / Practice 2-load (hours): ady period: 28 / 14 ent					
Number of ECTS cred	its: 4					
Recommended semester	er/trimester of the course: 1., 3.					
Course level: I., II.						
Prerequisities:						
Conditions for course of Homeworks, active part Final written exam, oral	completion: ticipation in laboratory exercises, midterm test. l examination.					
Learning outcomes: Understand the princip of quantization, predic algorithms. Understand	les of lossy compression algorithms. Be able to apply different methods tion and difference procedures in lossy image and sound compression the JPEG and MPEG compression standards.					
 Brief outline of the coultine of	rse: oding and information transfer, compression ratio, criteria of uniquely and prefix lossless codes. distribution of probabilities of occurrences of input characters, relation to ruction, adaptive variants. teger, binary, adaptive versions, advantages and disadvantages of statistical iction methods, JBIG, JPEG-LS standards, PPM. ion methods, LZ77, LZW, use of transformations, BWT, ACB, dynamic mpression, RD function, probabilistic and physiological models for efficient and non-uniform scalar quantization, adaptive versions. optimization according to distribution function, compressors and expanders. ues, prediction methods, adaptive quantization with prediction, DPCM id video coding. lossy coding, orthonormal representations, component analysis, two- tions. nsform, use in image compression, JPEG encoder. signal decomposition, signal synthesis from subbands, use in sound oustic models, MP3, AAC coding. , EZW encoder, use in audio and video coding. on, MPEG standards, adaptive algorithms for streaming and video					

Recommended literature:

- 1. D. Salomon: Data Compression, The Complete Reference, Springer, 2004.
- 2. K. Sayood: Introduction to Data Compression, Morgan Kaufmann, 2012.

Course language:

Slovak or English

Notes:

Course assessment

Total number of assessed students: 21

А	В	С	D	Е	FX
28.57	4.76	28.57	19.05	19.05	0.0

Provides: doc. RNDr. Jozef Jirásek, PhD.

Date of last modification: 08.01.2022

University: P. J. Šafá	arik University in Košice
Faculty: Faculty of S	Science
Course ID: ÚMV/ KOA/10	Course name: Combinatorial algorithms
Course type, scope a Course type: Lectu Recommended cou Per week: 3 / 1 Per Course method: pro-	and the method: re / Practice rse-load (hours): study period: 42 / 14 esent
Number of ECTS cr	redits: 6
Recommended seme	ester/trimester of the course: 2.
Course level: II.	
Prerequisities:	
Conditions for cours The evaluation consi consists of the elabor approximation of the representation.	se completion: sts of a project (30 points) and an oral exam (70 points). The semester project ration of a computer program that returns the optimal solution or a acceptable optimal solution, respectively, of a selected graph problem given by a suitable
Learning outcomes: Understanding of b algorithmic aspects of derived from mathem	asic graph algorithm, the close connection between the theoretical and of discrete mathematics, ability to understand how selected algorithms can be natical statements, ability to prove the correctness of algorithms.
Brief outline of the of Basic notions from g Introduction to algorial algorithms, greedy a Trees, spanning trees spanning trees of a g Prim, and Boruvka's Distance in graphs. algorithms) and othe Introduction to networks, the Matchings, maximum weight in bipartite gr Location of centers i Eulerian graphs and Hamiltonian graphs, Recommended liters	course: graph theory. fithms and complexity. Basic types of algorithms - sorting algorithms, search lgorithms. NP-completeness. s and rooted trees. Depth first search, breadth first search. Generating of all graph, number of spanning trees. Minimum spanning tree problem (Kruskal, algorithms). Shortest path problem in (non)oriented (weighted) graphs (various types of r variations of this problem. ork analysis, critical path method. he max-flow min-cut theorem and related concepts. n matchings in bipartite and general graphs, finding a matching with maximum raphs. n graphs, finding a center, absolute center, and a median of a graph. Chinese postman's problem. Travelling salesman problem and approximation algorithms for TSP.
 G. Chartrand, O.R. New York 1993. J.L. Gross, J. Yelle D. Jungnickel: Grading Content of Cont	Oellermann: Applied and Algorithmic Graph Theory, McGraw-Hill, Inc. en: Graph Theory and Its Applications, Chapman & Hall/CRC 2006. aphs, Networks, and Algorithms, Springer-Verlag Berlin 2005.
	D 16

4. J. Plesník: Grafové algoritmy, Veda Bratislava 1983.

4. J. Plesník: C	Grafové algoritmy	, Veda Bratislava	1983.				
Course langua Slovak	ge:						
Notes:							
Course assess Total number of	nent of assessed studer	nts: 99					
А	В	B C D E FX					
35.35	35.35 26.26 22.22 9.09 5.05 2.02						
Provides: RNI	Dr. Mária Maceko	vá, PhD.					
Date of last me	odification: 19.04	4.2022					
Approved: pro	f. RNDr. Gabriel	Semanišin, PhD.	, prof. RNDr. Iv	an Žežula, CSc.			

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: KPPaPZ/KK/07	Course name: Communication and Cooperation
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent
Number of ECTS cro	edits: 2
Recommended seme	ster/trimester of the course: 3.
Course level: II.	
Prerequisities:	
Conditions for cours Evaluation: A condition for stude student will actively solutions. The output for evalu presentation or a vide Learning outcomes: The goal of the subject	e completion: Int evaluation is his active participation in the seminar. It is expected that the participate in the discussions and will express their positions and possible nation will be the development of a project in the form of a Power Point to on a selected communication topic.
The goal of the subject language and commu The student can dem contexts. The student can de assertiveness, empath The student can apply	nication skills through experiential activities. onstrate an understanding of individual behavior in various communication escribe, explain and evaluate communication techniques (cooperation, ny, negotiation, persuasion) in practical contexts.
Brief outline of the c Communication Communication theor Non-verbal communi Verbal communication about active listening Empathy Short conversation communication) Cooperation About the basics of c About types, signs, ty Characteristics of the Small social group (s individual in the grout	ourse: ry cation and its means n (basic components of communication, language means of communication) and effective communication (principles and principles of effective ooperation /pes and factors of cooperation team (positions in the team) tructure, development, characteristics of a small social group, position of the up)

About leadership (characteristics of the leader, management, leadership styles)

Recommended literature:

Course language:

Notes:

Course assessment

Total number of assessed students: 281

abs	n	Z				
98.22	1.78	0.0				
Provides: Mgr. Ondrej Kalina, PhD., Mgr. Lucia Barbierik, PhD.						
Date of last modification: 31.07.2022						

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ VKN/15	Course name: Computational and cognitive neuroscience II
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: II., N	
Prerequisities:	
Conditions for cours Midterm exam Final exam consisting	g of written and/or oral part
Learning outcomes: Advanced topics in neuroscience.	computational and cognitive neuroscience, and in the tools used in
Brief outline of the c 1. Intro: Cognitive ps Theme 1: Topics in c 2. Neural basis of vis 3. Visual object recog 4. Auditory cognition 5. Cortical sound pro 6. Other topics in the Topic 2: Modeling in 7. Intro 8. Connectionism, ST 9. Additive and shum 10. Learning rule Ou 11. Adaptive resonan 12. Statistical and der Topic 3: Current rese 13. Invited lecture	ourse: sychology, neural modeling. ognitive and neural science ion gnition and visual scene analysis n. Echo suppression. Auditory scene analysis cessing. study of brain and main: thinking, consciousness, emotions, motivation cognitive and neural science I'M and LTM modeling ting neural networks. tstar. ice theory. cision-theory modeling arch at UPJS
Recommended litera 1. KANDEL, E. R., S McGraw-Hill, 2021 I 2. Dayan P and LF A Modeling of Neural S 3. Thagard P: Mind: 978-0262701099	Ature: SCHWARTZ, J. H. and JESSELL, T.M.: Principles of Neural Science. SBN-13: 978-1259642234 bbott: Theoretical Neuroscience - Computational and Mathematical Systems. MIT Press, 2005 ISBN-13: 978-0262541855 Introduction to Cognitive Science, 2nd Edition. Bradford Books. ISBN-13 :

4. HERTZ, J., KROGH, A. and PALMER R. G.: Introduction to the theory of neural computation. Addison-Wesley 1991 ISBN-13: 978-0201515602

Course language:

Slovak or English

Notes:

Content prerequisites:

basics of neurobiology, cognitive psychology, linear algebra and differential equations, programing, or instructor's consent

Course assessment

Total number of assessed students: 9

А	В	С	D	Е	FX
44.44	11.11	22.22	11.11	11.11	0.0

Provides: doc. Ing. Norbert Kopčo, PhD., RNDr. Keerthi Kumar Doreswamy, Ing. Udbhav Singhal, Mgr. Ondrej Spišák

Date of last modification: 08.01.2022

	COURSE INFORMATION LETTER
University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ VYZ1/15	Course name: Computational complexity
Course type, scope a Course type: Lectu Recommended cou Per week: 2 Per stu Course method: pro Number of ECTS cr	and the method: re rse-load (hours): rdy period: 28 esent redits: 4
Recommended seme	ester/trimester of the course: 1.
Course level: II., N	
Prerequisities:	
Conditions for cours Oral examination.	se completion:
Learning outcomes: To give students the completeness.	neoretical background in computational complexity and theory of NP-
Brief outline of the o 1: Introduction: the n	course: otion of computational complexity, computational time, computational model,

example - the problem of sorting, computational complexity as an asymptotic function

2: Basic computational models: RAM and RASP computers, the cost of an elementary step on these computers, single-tape Turing machine, multi-tape Turing machine, nondeterministic variants of these computational models, transformations among these models with respect to the time complexity

3: The classes P and NP: basic definitions, presenting (un)undirected graphs on the input, 3COL

- the set of all 3-colorable graphs is in NP, 2COL - the set of all 2-colorable graphs is in P, SAT

- the set of satisfiable Boolean formulas is in NP, CNF-SAT - Boolean formulas in conjunctive normal form

4: Variants of P and NP: decision problem, the problem of finding a solution, optimization problem, polynomial conversions among different variants

5: NP-completeness: reducibility in polynomial time and its transitivity, definition of the NPcompleteness and its basic properties

6: NP-completeness of SAT

7: Variants of SAT: 3CNF-SAT - satisfiability of Boolean formulas in 3-conjunctive normal form, kCNF-SAT, CNF-SAT - satisfiability in k-conjunctive (conjunctive) normal form, 2CNF-SAT is in P

8: 3COL and its variants: 3COL (the problem of coloring vertices of a graph with 3 colors) in NP-complete, consequently: for each k>3, kCOL (the problem of coloring with k colors) is NPcomplete as well

9: Colorability of a planar graph with three colors: presenting a planar graph on the input, the proof of NP-completeness, coloring with a larger number of colors

10: Another NP-complete problems: Exact set cover, Clique, Vertex cover

11: Hamiltonian path: Hamiltonian path in a directed and in undirected graph

12: Subset-sum-like problems: Subset Sum - the problem of whether any subset of the integers sum to precisely a target sum, Partition - the problem of whether a given multiset of positive integers can be partitioned into two subsets with equal sums, a "more relaxed" version of Partition - achieving an approximate equality of the sums, distribution of tasks among K parallel processors

13: Beyond P a NP: a review of the basic complexity classes - L, NL, P, NP, PSpace, NPSpace, ExpTime, NExpTime, ..., simulation of (non)deterministic space in (non)deterministic time, conversions in opposite directions

14: PSpace: QBF - true quantified Boolean formulas, prenex normal form, Pspace completeness of QBF, PSpace = NPSpace

Recommended literature:

1. J.E. Hopcroft, R.Motwani, J.D. Ullman: Introduction to automata theory, languages, and computation, Addison-Wesley, 2007.

2. M. Sipser: Introduction to the Theory of Computation, Thomson, 2nd edition, 2006.

3. L.A.Hemaspaandra, M.Ogihara: Complexity theory companion, EATCS series, texts in computer science, Springer-Verlag, 2002.

4. S. Arora, B. Barak: Computational Complexity: A Modern Approach, Cambridge Univ. Pess, 2009. 5. G.Brassard, P.Bradley: Fundamentals of algorithmics, Prentice Hall, 1996.

6. D.P.Bovet, P.Crescenzi: Introduction to the theory of complexity, Prentice Hall, 1994.

7. C. Calude and J. Hromkovič: Complexity: A Language-Theoretic Point of View, in G.

Rozenberg and A. Salomaa, Handbook of Formal Languages II, Springer, 1997.

Course language:

Slovak or english

Notes:

Content prerequisities:

Basic notions from the theory of automata and formal languages.

Basic skills in programming and design of algorithms (in any programming language). Basics knowledge in mathematical logic, set theory, and graph theory.

Course assessment

Total number of assessed students: 357

А	В	С	D	Е	FX
57.7	15.41	12.04	7.28	7.28	0.28

Provides: prof. RNDr. Viliam Geffert, DrSc.

Date of last modification: 23.11.2021

University: P I Šafá	rik University in Košice
Ecoltry Ecolty of S	
Faculty: Faculty of S	
Course ID: UMV/ VSM/10	Course name: Computational statistics and simulation methods
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: II.	
Prerequisities:	
Conditions for cours Written tests. Final e exam.	e completion: valuation is given at the basis of partial examination, written and oral part of
Learning outcomes:	
Getting to know mod	ern software and computational and simulation methods in statistics.
Brief outline of the c o Types of statistical o Computing distribut o Matrix computation o Random numbers g a) Uniform distribution b) General methods f c) Special methods f c) Special methods f o Simulations o Approximate evalu o Bootstrap method o Random processes o Introduction to Exp o Principles of cluste o Principal component o Factor analysis o GUHA method	ourse: computations, popular mathematical software ition and quantile functions is generation: on (linear reccurent generators, bit reccurent generators, nonlinear generators) or other distributions or other distributions ation of an integral and MCMC method oloratory data analysis r analysis nt analysis
Recommended litera • Olehla, Věchet, Ole • Olver et al.: NIST H 2010 • Deák: Random num • Fishman: Monte Ca • Backhaus, Erichson	 iture: ihla: Řešení úloh matematické statistiky ve Fortranu, Nadas, 1982 ihandbook of mathematical functions, NIST and Cambridge University Press, iber generators and simulation, Akadémiai kiadó, 1990 irlo. Concepts, Algorithms, and Applications., Springer, 1996 in Plinke, Weiber: Multivariate Analysemethoden, 7th ed., Springer, 1994

• Tan, Steinbach, Kumar: Introduction to Data Mining, Pearson Education Ltd., 2014

Course langua Slovak	ge:						
Notes:							
Course assessn Total number o	nent f assessed studen	ts: 54					
А	В	B C D E FX					
16.67	20.37	24.07	9.26	25.93	3.7		
Provides: prof.	RNDr. Ivan Žežu	ıla, CSc., doc. R	NDr. Daniel Klei	n, PhD.			
Date of last mo	dification: 14.04	1.2022					
Approved: prot	f. RNDr. Gabriel	Semanišin, PhD.	, prof. RNDr. Iva	n Žežula, CSc.			

University: P. J.	University: P. J. Šafárik University in Košice						
Faculty: Faculty	Faculty: Faculty of Science						
Course ID: ÚM TSS/10	IV/ Course name: Control theory						
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 EC	FS credits: 6						
Recommended	semester/trimes	ster of the cours	e: 1.				
Course level: II	•						
Prerequisities:							
Conditions for Based on two w	course completi ritten tests durin	on: g the semester an	nd on the oral exa	amination.			
Learning outco To learn the bas	Learning outcomes: To learn the basic notions of controllable systems.						
Brief outline of the course: Controllable systems. Pontrjagin maximum principle. Linear systems, bang-bang controls, singular controls Discrete systems, dynamic programming, Bellmann's optimality principle. Practical applications of theoretical results.							
 Recommended literature: 1. K. Macki, A. Strauss: Introduction to Optimal Control Theory, Springer, 1980. 2. G. Feichtinger, R.F. Hartl: Optimale Kontrolle okonomischer Prozesse, Berlin, 1986. 							
Course language: Slovak							
Notes:							
Course assessment Total number of assessed students: 77							
А	В	С	D	Е	FX		
22.08	27.27	22.08	15.58	12.99	0.0		
Provides: prof. RNDr. Katarína Cechlárová, DrSc.							
Date of last modification: 03.05.2015							
Approved: prof	. RNDr. Gabriel	Semanišin, PhD.	, prof. RNDr. Iva	an Žežula, CSc.			

Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Data Management Seminar II
SDMa/21	

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: 2.

Course level: II.

Prerequisities:

Conditions for course completion:

Active presentation of own and already known and published results related to diploma thesis in the middle and end of semester.

Learning outcomes:

To become familiar with selected current knowledge from the area of data analysis, machine learning and artificial intelligence. Developing skills such as understanding and interpreting scientific text.

Brief outline of the course:

1. - 2. Data mining case studies

- 3. 4. Graph algorithms
- 5. 6. Group work with students on topics in the field of data management
- 7. 8. Individual work with students on topics in the field of data management

9. - 10. Applications of machine learning methods in solving problems in different application domains.

11. - 12. Applications of in-depth learning methods in solving problems in different application domains.

Recommended literature:

1. CHOLLET, François. Deep learning v jazyku Python: knihovny Keras, Tensorflow. Přeložil Rudolf PECINOVSKÝ. Praha: Grada Publishing, 2019. Knihovna programátora (Grada). ISBN 978-80-247-3100-1.

2. GOODFELLOW Ian, BENGIO Yoshua a Aaron COURVILLE. Deep Learning. MIT Press, 2016. ISBN: 9780262035613.

3. Current articles from scientific journals, contributions at the scientific and professional conferences related to the topic of diploma thesis.

Course language:

English

Notes:

Course assessment Total number of assessed students: 7					
abs n					
100.0	0.0				
Provides:					
Date of last modification: 20.09.2021					
Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.					

Faculty: Faculty of Science

Course ID: ÚINF/	Course name: Data Management Seminar II
SDMb/19	

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: 3.

Course level: II.

Prerequisities:

Conditions for course completion:

Active presentation of known and own results related to final thesis in the middle and end of semester.

Learning outcomes:

To become familiar with selected current knowledge from the area of data analysis, machine learning and artificial intelligence. Developing skills such as understanding and interpreting scientific text.

Brief outline of the course:

1. - 2. Data mining case studies

3. - 4. Graph algorithms

5. - 6. Group work with students on topics in the field of data management

7. - 8. Individual work with students on topics in the field of data management

9. - 10. Applications of machine learning methods in solving problems in different application domains.

11. - 12. Applications of deep learning methods in solving problems in different application domains.

Recommended literature:

1. CHOLLET, François. Deep learning v jazyku Python: knihovny Keras, Tensorflow. Přeložil Rudolf PECINOVSKÝ. Praha: Grada Publishing, 2019. Knihovna programátora (Grada). ISBN 978-80-247-3100-1.

2. GOODFELLOW Ian, BENGIO Yoshua a Aaron COURVILLE. Deep Learning. MIT Press, 2016. ISBN: 9780262035613.

3. Current articles from scientific journals, contributions at the scientific and professional conferences related to the topic of diploma thesis.

Course language:

English

Notes:

Course assessment						
Iotal number of assessed students: 5						
abs n						
100.0	0.0					
Provides:						
Date of last modification: 25.07.2022						
Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.						

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ DPO/15	Course name: Doctoral Thesis and its Defence
Course type, scope a Course type: Recommended cour Per week: Per stud Course method: pre	nd the method: rse-load (hours): y period: sent
Number of ECTS cro	edits: 20
Recommended seme	ster/trimester of the course:
Course level: II.	
Prerequisities:	
Conditions for cours The diploma thesis is fraud and must meet 21/2021, which lays Košice and its compose and in the process of	e completion: the result of the student's own work. It must not show elements of academic the criteria of good research practice defined in the Rector's Decision no. down the rules for assessing plagiarism at Pavol Jozef Šafárik University in nents. Fulfillment of the criteria is verified mainly in the process of supervision thesis defense. Failure to do so is reason for disciplinary action.
Learning outcomes: The diploma thesis d field of study, acquist profile of the graduate selected field problem of content, formal and 1/2011 on the basic ro the 1st, 2nd and comb	emonstrates mastery of extended theory and professional terminology of the ition of knowledge, skills and competencies in accordance with the declared of the study program, as well as the ability to apply them creatively in solving its. Student demonstrates the ability of independent professional work in terms I ethical. Further details on the diploma thesis are determined by Directive no. equirements of final theses and the Study Regulations of UPJŠ in Košice for bined 1st and 2nd degree.
Brief outline of the c 1. Elaboration of the 2, Presentation of the 3. Answering questio	ourse: diploma thesis in accordance with the instructions of the supervisor. results of the diploma thesis before the examination commission. ns related to the topic of the diploma thesis within the discussion.
Recommended litera The recommended lit diploma thesis.	ture: erature is determined individually in accordance with the topic of the
Course language: Slovak and optionally	v English.
Notes:	

Course assessment							
Total number o	Total number of assessed students: 60						
A B C D E FX							
56.67	20.0	16.67	6.67	0.0	0.0		
Provides:							
Date of last modification: 19.11.2021							
Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.							

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ ZNA1/21	Course name: Foundations of knowledge systems
Course type, scope a Course type: Lectur Recommended cour Per week: 3 Per stu Course method: pre	nd the method: re rse-load (hours): dy period: 42 esent
Number of ECTS cr	edits: 4
Recommended seme	ster/trimester of the course: 2.
Course level: II.	
Prerequisities:	
Conditions for cours Test of theoretical kn Written and oral exar	e completion: owledge in the middle of the semester. n.
Learning outcomes: The goal is to teach st in database and know	rudents some advanced applications of logic into computer science, especially redge systems.
Brief outline of the c 1. logic formulas, ser 2. Herbrand model, c 3. SLD-resolution an 4. logic and database 5. logic and expert sy 6. basic notions of La 7. basic notions of Fu 8. basic algorithms of 9. optimal table deco 10. intercontextual st 11. Direct products an 12. Applications on r	ourse: nantic, models and logical inference onstruction and usability d query, SLD trees s, relational databases, deductive databases stems attice Theory and Formal Concept Analysis (FCA) azzy logic and Fuzzy extension of FCA f FCA mposition, factorisation ructures, bonds and choosing of optimal bonds eal data
Recommended litera Shawn Hedman. A fi computability and co Shan-Hwei Nienhuys Springer-Verlag, ISB Kristian Kersting. Ar IOS Press, ISBN 1-55 Nilsson U., Maluszyn Bělohlávek R.: Fuzzy Plenum Publishers, N	 nture: rst course in logic: An introduction to model theory, proof theory, mplexity. Oxford university press, ISBN 0–19–852980–5, 2006. a-Cheng, Ronald de Wolf. Foundations of Inductive Logic Programming. N 3-540-62927-0, 1997. a Inductive Logic Programming Approach to Statistical Relational Learning, 8603-674-2, 2006. a Iski J.: Logic, Programming and Prolog, John Wiley & Sons Ltd. 1995. b Relational Systems: Foundations and Principles. Kluwer, Academic/ Jew York, 2002.

Ganter B., Wille R.: Formal Concept Analysis: Mathematical Foundations, Springer Berlin, 1999.

Course language: Slovak or English							
Notes: content prerequisites: basics of logic, introduction to computer science							
Course assessment Total number of assessed students: 82							
А	В	С	D	Е	FX		
56.1	2.44	18.29	7.32	12.2	3.66		
Provides: doc. RNDr. Ondrej Krídlo, PhD.							
Date of last modification: 23.11.2021							
Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.							

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: ÚM THR/10	V/ Course na	me: Game theo	ry				
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 ECT	FS credits: 6						
Recommended	semester/trimes	ster of the cours	se: 1.				
Course level: II.							
Prerequisities:							
Conditions for Two written exa The final assess	course completi ams dring the se ment is based on	on: emester (solving the written tests	problems), presess and oral examir	entation of an int nation.	eresting model.		
Learning outco Knowledge of b applications of g	Learning outcomes: Knowledge of basic models of noncooperative and cooperative game theory, solution methods and applications of game-theoretic models in economics and everyday life.						
Brief outline of the course: Examples of games. Extensive form of a game, value of the game. Von Neumann Morgenstern theory of utility. Matrix games and their solution. Bimatrix games.Negotiations theory. n-person games: core, Shapley value. Economic applications of game theory. The students should have basic knowledge in probability theory and linear programming (including duality theory and simplex method)							
 Recommended literature: 1. K. Binmore, Fun and games, D.C. Heath, 1992 2. G. Owen, Game Theory, Academic Press (existuje ruský preklad). 3. A.R. Karlin, Y.Peres, Game theory alive, American Mathematical Society, 2017 4. L.C. Thomas, Games, Theory and Applications, Wiley, New York. 5. H.S. Bierman, L. Fernandez, Game Theory with Economic Applications, Addison-Wesley, 1998. 							
Course language: Slovak							
Notes:							
Course assessment Total number of assessed students: 87							
Α	В	С	D	Е	FX		
19.54 20.69 24.14 18.39 14.94 2.3							
Provides: prof. RNDr. Katarína Cechlárová, DrSc.							

Date of last modification: 19.09.2021
University: P. J. Šaf	University: P. J. Šafárik University in Košice						
Faculty: Faculty of	Science						
Course ID: KF/ DF2p/03	Course ID: KF/ Course name: History of Philosophy 2 (General Introduction) DF2p/03						
Course type, scope Course type: Lectu Recommended cou Per week: 2 / 1 Per Course method: pr	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 c	Number of ECTS credits: 4						
Recommended semester/trimester of the course:							
Course level: I., II.	Course level: I., II.						

Prerequisities:

Conditions for course completion:

The condition for awarding the evaluation will be the active approach of students to fulfilling their study obligations, independent work with selected philosophical texts in the library, active participation and creative work in seminars. In connection with the possibility of interrupting face-to-face teaching, there will be greater demands on the student's independent study and the processing of professional literature, which will be continuously evaluated, using e-mail to communicate with the teacher, at the end of the semester, preparing and handing in the semester's seminar work by the set date, or also passing a knowledge test - about which the students will be informed in advance in sufficient time.

Learning outcomes:

Deepening knowledge about the development of spiritual culture in the European spiritual space and pointing out the most important sources of this development: (1) ancient philosophy and science, (2) Christianity as the second pillar of Europe, (3) the Renaissance and the emergence of modern science (mathematical natural science) as the third pillar of European development. Development of critical thinking skills, active position in professional (ethics of science), public and private life (ethics of responsibility). Transcending narrowly specialized views of the world.

Brief outline of the course:

Recommended literature:

Antológia z diel filozofov. Predsokratovci a Platon. Zost. J. Martinka. Bratislava: Nakladateľstvo Epocha 1970; Antológia z diel filozofov. Od Aristotela po Plotina. Zost. J. Martinka. Bratislava: Nakladateľstvo Pravda 1972. Predsokratovci a Platon. Antológia z diel filozofov. Zost. J. Martinka. Bratislava: Vydavateľstvo Iris 1998. Od Aristotela po Plotina. Antológia z diel filozofov. Zost. J. Martinka. Bratislava: Vydavateľstvo IRIS 2006. Anzenbacher, A.: Úvod do filozofie. Prel. K. Šprunk. Praha: SPN 1990. Barthes, R.: Mytologie. Prel. J. Fulka. Praha: Dokořán 2004. Bělohradský, V.: Společnost nevolnosti. Eseje z pozdější doby. Praha: SLON 2009. Benjamin, W.: Iluminácie. Prel. A. Bžoch; J. Truhlářová. Bratislava: Kalligram 1999. Borges, J. L.: Borges ústne. Prednášky a eseje. Prel. P. Šišmišová. Bratislava: Kalligram 2005. Cassirer, E.: Esej o človeku. Prel. J. Piaček. Bratislava: Nakladateľstvo Pravda 1977. Debord, G.: Společnost spektáklu. Prel. J. Fulka; P. Siostrzonek. Praha: Nakladatelství :intu: 2007. Farkašová, E.: Na rube plátna. Bratislava: Vydavateľstvo Spolku slovenských spisovateľov 2013.

Feyerabend, P.: Věda jako umění. Prel. P. Kurka. Praha: JEŽEK 2004. Freud, S.: Nepokojenost v kultuře. Prel. L. Hošek. Praha: Hynek 1998. Hadot, P.: Co je antická filosofie. Prel. M. Křížová. Praha: Vyšehrad 2017. Hippokratés: Vybrané spisy. Prel. H. Bartoš; J. Černá; J. Daneš; S. Fischerová. Praha: OIKOYMENH 2012. Husserl, E.: Filosofie jako přísná věda. Prel. A. Novák. Praha: Togga 2013. Kuhn, T. S.: Štruktúra vedeckých revolúcií. Prel. J. Viceník. Bratislava: Nakladateľstvo Pravda 1981. Leško, V., Mihina, F. a kol.: Dejiny filozofie. Bratislava. Iris 1993 Leško, V.: Dejiny filozofie I. Od Tálesa po Galileiho. Prešov: v. n. 2004, 2007. Leško, V.: Dejiny filozofie II. Od Bacona po Nietzscheho. Prešov: v. n. 2008. McLuhan, M.: Jak rozumět médiím. Extenze člověka. Prel. M. Calda. Praha: Mladá fronta 2011. Patočka, J.: Duchovní člověk a intelektuál. In: Patočka, J.: Péče o duši III. Praha: OIKOYMENH 2002, s. 355 - 371. Popper, K. R.: Otevřená společnost a její nepřátelé I. Platónovo zaříkávání. Prel. M. Calda; J. Moural. Praha: OIKOYMENH 2011. Sloterdijk, P.: Kritika cynického rozumu. Prel. M. Szabó. Bratislava: Kalligram 2013. Störig, H.J.: Malé dějiny filozofie. Prel. P. Rezek. Praha: Zvon 1991. Wittgenstein, L.: Filozofické skúmania. Prel. F. Novosád. Bratislava: Nakladateľ stvo Pravda 1979. Wright von, H. G.: Humanizmus ako životný postoj. Prel. M. Žitný. Kalligram 2001. Žižek, S.: Mor fantázií. Prel. M. Gálisová; V. Gális. Bratislava: Kalligram 1998.

Course language:

Notes:							
Course assessment							
Total number o	f assessed studen	ts: 746		<u>.</u>			
А	В	B C D E FX					
60.59	14.21	12.6	8.58	3.35	0.67		
Provides: doc. PhDr. Peter Nezník, CSc.							
Date of last modification: 11.07.2022							
Approved: prot	f. RNDr. Gabriel	Semanišin, PhD.	, prof. RNDr. Iv	an Žežula, CSc.			

University: P. J. Ša	University: P. J. Šafárik University in Košice					
Faculty: Faculty of	Faculty: Faculty of Science					
Course ID: KF/ IH2/03	Course name: Idea Humanitas 2 (General Introduction)					
Course type, scope Course type: Prac Recommended co Per week: 2 Per s Course method: p	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	eredits: 2					
Recommended sen	nester/trimester of the course: 3.					
Course level: II.						
Prerequisities.						

Conditions for course completion:

100% graded credit: 40% (evaluated participation in seminars, processing of partial seminar work - separate assignment) 60% (final seminar work - student project). In the case of implementation of the classical form of teaching - face-to-face - active participation of the student in the seminar; study and reflection of assigned philosophical texts, attempt to interpret them. In the case of the introduction of distance education (as was the case due to Covid-19), the student will have to actively fulfill tasks of a partial nature, where increased demands will be placed on the student and his independent work with philosophical texts and literature. Tasks will be assigned to the students by the teacher on an ongoing basis. The student must study the assigned philosophical texts, think through and process them, submit them as a seminar paper, i.e. in written form. In both cases, the study of literature is necessary to pass the subject. The conclusion of the subject is the preparation of a seminar paper - the final seminar paper - in the range of at least 10 - 12 pages of A4 (with compliance with the bibliographic standard of the Department of Philosophy (KF) for seminar and qualification papers).

Learning outcomes:

To supplement and expand the interest of natural science students in social science issues related to the issues of the development of philosophy, science and human leadership, which are manifested in the urgent problems of today's world and society. Special emphasis is placed on the formation of humanistic ideas, their origin, transformation and possible pitfalls and risks. In addition to thinking about serious questions of the past and present, it also includes thinking about the present and the current contexts of major topics in philosophy and Western culture in particular. Therefore, the preparation and implementation of a program aimed at cooperation with alternative directions of pedagogy in the conditions of our transforming education system is understood as a practical output.

Brief outline of the course:

The age of the image of the world. Doubt as a principle of philosophy. The emergence of the image of the world (Weltbild); the differences of ancient theoria, medieval scientia, the emergence of mathematical natural science. Science as an operation (Betrieb); institutionalization of science. Philosophy, science and the modern world. The movement of human life: acceptance, defense, freedom as struggle, submission to finitude. The modern world and the search for meaning. Bureaucracy, impersonality, predominance of technocratic approaches. Fatigue as a modern threat

to Europe. The paths to freedom lead through the rediscovery of one's own Self and creativity. The basic condition for the educability of any education is the care of the soul. The crisis of European humanity. Antiquity. Philosophy - the emergence of a special community of people, the beginnings of education - paideia. The winding road of leadership. The origin and birthplace of calculating thinking. Europe and the post-European era. Care of the soul as a basic idea of Patočka's philosophy. The difference in the position of Plato and Democritus in understanding the care of the soul. The idea of caring for the soul and Aristotle.

Recommended literature:

Hadot, P.: What is ancient philosophy. Transl. M. Křížová. Prague: Vyšehrad 2017. Hegel, G.
W. F.: Phenomenology of Spirit. Prague: NČSAV 1960 Husserl, E.: The Crisis of European Humanity and Philosophy. In: Crisis of European sciences and transcendental phenomenology.
Prague: Academie 1996. Mokrejš, A.: Eros as a Theme of Greek Thought. Prague: Triton 2009.
Patočka, J.: Péče o duši I. Prague. OIKOYMENH 1996. Patočka, J.: Care of the soul II. Prague.
OIKOYMENH 1999. Vernant, J.-P.: The beginnings of Greek thought. Prague: OIKOYMENH 1995. Wright von, G.H.: Humanism as a life attitude. Bratislava: Kalligram 2001.

Course language:

Notes:

Course assessment

Total number of assessed students: 12

А	В	С	D	Е	FX
91.67	8.33	0.0	0.0	0.0	0.0

Provides: doc. PhDr. Peter Nezník, CSc.

Date of last modification: 24.08.2022

	ă cr 11 -	· · ·	· · · · ·					
University: P. J	. Safárik l	Jnivers	ity in Košice					
Faculty: Faculty of Science								
Course ID: ÚIN IMUI/19	NF/ Co	urse na	me: Informatic	n management	and artificial intelli	gence methods		
Course type, so Course type: Recommended Per week: Per Course metho	Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present							
Number of EC	TS credit	s: 4						
Recommended	semester	/trimes	ter of the cour	se:				
Course level: I	•							
Prerequisities: ÚMV/NPR/19	ÚINF/ZN	A1/21 a	and ÚINF/NEU	1/15 and ÚINF	/STU1/16 and ÚM	V/VSM/10 and		
Conditions for Appropriate kr demonstrating t the problems of	Conditions for course completion: Appropriate knowledge and competencies from the profile subjects of the study program, demonstrating the ability to synthesize the acquired knowledge and procedures and apply them to the problems of data analysis and artificial intelligence.							
Learning outco Verification of	omes: acquired s	tudent o	competencies ir	accordance wi	ith the graduate prot	file.		
Brief outline of 1. Basics of kno 2. Principles an 3. Principles an 4. Computation 5. Principles an	the cour owledge s d method d method al and sin d method	se: ystems s of neu s of mac nulation s of rand	and their princi ral networks chine learning methods dom processes	ples				
Recommended literature: Information sources recommended within individual profile subjects.								
Course languag Slovak languag	ge: e or Engli	sh lang	uage					
Notes:								
Course assessm Total number o	nent f assessed	student	ts: 2					
A	В		С	D	Е	FX		
100.0	0.0)	0.0	0.0	0.0	0.0		
Provides:	<u> </u>	I						
Date of last mo	Date of last modification: 31.03.2022							
Approved: prof	f. RNDr. (Gabriel	Semanišin, PhD	., prof. RNDr.	Ivan Žežula, CSc.			

University: P. J. Šafá	rik University in Košice						
Faculty: Faculty of S	Faculty: Faculty of Science						
Course ID: ÚINF/ IDS18/18	Course ID: ÚINF/ DS18/18Course name: Introduction to data science						
Course type, scope a Course type: Lectur Recommended cou Per week: 2 Per stu Course method: pro	and the method: re rse-load (hours): ady period: 28 esent						
Number of ECTS cr	redits: 3						
Recommended seme	ester/trimester of the course: 2., 4.						
Course level: II.							
Prerequisities:							
of the defense of the semester. Student car answers to questions the lecture. From the on the sum of the po course, the student ne	semestral project, based on the report the student submit until the end of the n get at most 50 points from the practical part. The theoretical part consists of related to the theory of underlying methods presented during the course of theoretical part the student can get at most 50 points. The final grade is based bints the student has got for the practical and the theoretical part. To pass the eed to get at least 60 points.						
Learning outcomes: Knowledge of basic a data mining project of data and modeling its results into produc	principles and concepts of data mining, practical experience with working on t, such that, ability to analyze the problem and available data, pre=processing g, ability to evaluate the success of a data mining project and application of ction.						
Brief outline of the of 1) Introduction: Histo 2) Clustering: similar DBSCAN, evaluation 3) Frequent patterns rules, frequent seque 4) Prediction: the tar parameters of mode discriminant function 5) Recommendation via	 course: ory of data mining, CRISP-DM method. arities of various data types, agglomerative clustering, k-means clustering, n of clusters. : frequent itemsets, algorithms of Apriori, Eclat and FP-Growth, association nces, evaluation of the quality of patterns. ask of regression and classification, linear model, parameters and hyperlels, regularization, bias and variance, cross-validation, Bayes model, n, hyper-parameter tuning, quality of models. n techniques: explicit and implicit feedback, collaborative filtering, matrix factorization, quality of recommendation. 						

6) Data pre-processing: data quality, noise, missing values, transformation of data, normalization, attribute selection, dimension reduction, sampling.

Recommended literature:

- Peter Flach (2012). Machine Learning: The Art and Science of Algorithms that Make Sense of Data. Cambridge University Press.

- Jiawei Han, Micheline Kamber, Jian Pei (2011). Data Mining: Concepts and Techniques.

Morgan Kaufmann.

- Pang-Ning Tan, Michael Steinbach, Vipin Kumar (2005). Introduction to Data Mining. Addison Wesley.

- João Moreira, Andre de Carvalho,	Tomáš Horváth (2018). A	General Introduction to Data
Analytics. Wiley.		

Course language:

Slovak or English

Notes:

Content prerequisities: derivation, working with vectors and matrices, programming, data structures

Course assessment

Total number of assessed students: 5

10000111011100110							
А	В	С	D	Е	FX		
40.0	20.0	0.0	40.0	0.0	0.0		
Provides: RNDr. Tomáš Horváth, PhD.							

Date of last modification: 12.11.2021

University: P. J.	Šafárik Univers	sity in Košice						
Faculty: Faculty	Faculty: Faculty of Science							
Course ID: ÚM LTM/10	: ÚMV/ Course name: Logic and set theory							
Course type, sc Course type: L Recommended Per week: 3 / 2 Course method	Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 3 / 2 Per study period: 42 / 28 Course method: present							
Number of EC	FS credits: 6							
Recommended	semester/trime	ster of the cours	e: 1.					
Course level: I.,	, II.							
Prerequisities:	ÚMV/MANb/19	or ÚMV/FRPb/	19 or ÚMV/MAN	N2b/22				
Conditions for Exam	course complet	ion:						
Learning outco To obtain a basi a proof.	mes: c knowledge or	the mathematica	al notion of an in	finity. Analysis	of the notion of			
Set as a mathem mappings. Finite and count Sentential calcul predicate calcul Methods of proc	Set as a mathematical formularization of an infinity. Properties of the set of reals. Relations and mappings. Finite and countable sets. Cardinality of continuum. Elementary cardinal arithmetics. Sentential calculus, an axiomatization. Completness Theorem. Methods of proofs. Language of predicate calculus, examples. Axiomatizations of predicate calculus and the notion of a proof.							
Recommended literature: L. Bukovský: Teória množín, ES UPJŠ, Košice, 1984. L. Bukovský: Množiny a všeličo okolo nich, ES UPJŠ, Košice, 2005. L. Bukovský, Úvod do matematickej logiky, elektronický učebný text. A. Sochor: Klasická matematická logika, Karolinum, Praha, 2001. E. Mendelson, Introduction to Mathematical Logic, van Nostrand 1964.								
Course languag Slovak	Course language: Slovak							
Notes:								
Course assessm Total number of	ent assessed studer	nts: 270						
А	В	С	D	Е	FX			
12.59	18.89	19.26	16.3	31.11	1.85			
Provides: RNDr. Jaroslav Šupina, PhD., RNDr. Adam Marton								
Date of last mo	dification: 19.04	4.2022		=				

University: P. J. Šafá	irik University in Košice						
Faculty: Faculty of S	Faculty: Faculty of Science						
Course ID: ÚINF/ STU1/16	Course name: Machine learning						
Course type, scope a Course type: Lectu Recommended cou Per week: 2 / 2 Per Course method: pro-	and the method: re / Practice arse-load (hours): study period: 28 / 28 esent						
Number of ECTS cr	redits: 5						
Recommended seme	ester/trimester of the course: 2.						
Course level: II.							
Prerequisities:							
Conditions for course The realization of a practical tasks. Succe learning, classification on machine learning.	se completion: project focused on the application of machine solution methods in solving essful completion of two written tests based on machine learning, probabilistic on tasks. Successful completion of the written and oral part of the exam based , probabilistic learning, classification tasks.						
Learning outcomes: The result of education will gain the ability intelligence. Can wo	on is an understanding of the basic principles of machine learning. The student to analyze data using selected methods of machine learning and artificial rk with a selected tool for modeling neural networks.						
 Brief outline of the of 1. Learning algorithm numbering. 2. Boolean formulas representation. 3. Probabilistic learn and credibility. 4. Probabilistic learn 5. Relationships betwithe least squares met 6. Linear modeling, generation. 7. Linear modeling ut 8. VC (Vapnik - Cervon) 9. Bayesian approach 10. Clustering. 11. Hidden Markov numbers 	course: ms, concepts, hypotheses. Training and learning, learning by construction and and their representation. Learning algorithms for monocells. Hypothesis space ing. An estimate of the number of examples needed to achieve some accuracy ing and consistent algorithms. veen attribute sets and predicted variables. Regression. Linear modeling using hod of deviations. generalization, nonlinear responses from a linear model, data validation. using probability theory and maximum confidence. vonenkis) dimension of its relation to perceptrons. h to learning. SVM. models.						
Recommended litera 1. ANTHONY, Mart University Press, 199 2. BROWNLEE, Jas	ature: in a Norman BIGGS. Computational Learning Theory, Cambridge 97. ISBN 978-0521599221. on. Machine Learning Mastery With Python. 2019.						

3. WATT, Jeremy, Reza BORHANI a Aggelos K. KATSAGGELOS. Machine learning refined: foundations, algorithms, and applications. Cambridge: Cambridge University Press, 2016. ISBN 978-1-107-12352-6.

Course language:

Slovak language or English language

Notes:

Course assessment

Total number of assessed students: 60

А	В	С	D	Е	FX
36.67	18.33	26.67	10.0	8.33	0.0
Provides: doc. RNDr. Ľubomír Antoni, PhD., doc. RNDr. Gabriela Andrejková, CSc.					

Date of last modification: 31.03.2022

University: P. J. Šafári	k University in Košice
Faculty: Faculty of Sci	ence
Course ID: ÚMV/ C MPA/19	Course name: Markov's processes and their applications
Course type, scope an Course type: Lecture Recommended cours Per week: 3 / 2 Per st Course method: press	d the method: / Practice e-load (hours): tudy period: 42 / 28 ent
Number of ECTS crea	lits: 6
Recommended semest	cer/trimester of the course: 1.
Course level: II.	
Prerequisities:	
Conditions for course Total evaluation based At least 50% must be of Final evaluation: ≥90%	completion: on 2 written tests $(2x40p)$ + assignment $(5p)$ and oral exam $(40p)$. obtained from each part. 6 A; $\geq 80\%$ B; $\geq 70\%$ C; $\geq 60\%$ D; $\geq 50\%$ E; $< 50\%$ FX.
Student should: 1. Obtain the knowledg 2. Apply theoretical kn 3. Obtain basic skills w	ge about modelling of real stochastic processes. howledge in practical problems solving in queuing and renewal theory. with CAS software SageMath based on Python.
Brief outline of the con- 1. Stochastic (random) 2. Markov chains (Mar 3. Classification of stat 4. Evaluation of transit 5. Special chains with Kolmogorov's different 6. Birth-and-death proc 7. Applications in qui indicators, opened systems v 10. Applications in rent 11. Renewal process w 12. Reliability of the systems of the 13. Limit theorems of the systems of the system of the systems of the systems of the system o	urse: processes (definition, characteristics, classification of processes). kov property, transition matrix, discrete-time Markov chains). tes of the process. tions, optimal strategies, Howard's algorithm. continuous time (continuous-time Markov chains, intensity of transition, tial equations, Poisson process). cesses. ueuing theory (Kendall's classification of queuing systems, efficiency ems without waiting). with waiting, closed systems. ewal theory and reliability. Markov chains in discrete renewal models. tith continuous time. ystem of elements. renewal theory.
Recommended literatu 1. Skřivánková V., Har Slovak) 2. Beichelt F.: Applied 3. Ross S. M.: Introduc 4. Janková, K. a kol. M	ure: nčová M.: Náhodné procesy a ich aplikácie, UPJŠ, Košice, 2018 (in Probability and Stochastic Processes, 2nd Ed., Chapman and Hall, 2016 ction to Probability Models, 12th ed., Elsevier, 2019 farkovove reťazce a ich aplikácie, epos, 2014 (in Slovak)

5. Prášková Z., Lachout P.: Základy náhodných procesu, MFF UK, Praha, 1998 (in Czech)

Course language:

Slovak

Notes:

The students are required to have basic knowledge about axiomatical theory of probability, distributions and characteristics of random variables.

Course assessment

Total number of assessed students: 80

А	В	С	D	Е	FX
25.0	15.0	21.25	20.0	16.25	2.5
Provides: doc.	RNDr. Martina H	ančová, PhD., R	NDr. Andrej Gaj	doš, PhD.	
Date of last modification: 13.09.2021					

University: P. J.	. Šafárik Unive	sity in Košice						
Faculty: Faculty	Faculty: Faculty of Science							
Course ID: ÚM VRS/14	V/ Course i	Course name: Multidimensional statistical methods						
Course type, sc Course type: H Recommended Per week: 3 Pe Course metho	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 EC	FS credits: 4							
Recommended	semester/trim	ester of the cours	e: 2.					
Course level: II								
Prerequisities:	,							
Conditions for Given at the bas	course comple sis of partial exa	tion: amination and wor	rking out an indiv	vidual project.				
Learning outco To learn to use	mes: the most widely	vused multivariate	e methods of data	processing prac	tically.			
Brief outline of Multivariate da multivariate no analysis. Multic	Brief outline of the course: Multivariate data, graphical visualization. Multivariate normal distribution. Inference for multivariate normal distribution. Dimension reduction - principal component analysis, factor analysis. Multidimensional scaling. Cluster analysis. Odds and risk ratios. Logistic regression.							
Recommended 1. W. Härdle, L 2. W. Härdle, Z 2007 3. R.A. Johnson N.J: Pearson Pro- 4. B. Everitt and Springer, 2011 5. D.J. Bartholo (2. vydanie)	 Recommended literature: 1. W. Härdle, L. Simar. Applied multivariate statistical analysis. Heidelberg: Springer, 2019 2. W. Härdle, Z. Hlávka: Multivariate statistics: Exercises and solutions. New York: Springer, 2007 3. R.A. Johnson, D.W. Wichern. Applied multivariate statistical analysis. Upper Saddle River, N.J: Pearson Prentice Hall, 2014 (6. vydanie) 4. B. Everitt and T. Hothorn. An introduction to applied multivariate analysis with R. New York: Springer, 2011 5. D.J. Bartholomew et al. Analysis of multivariate social science data. Chapman & Hall, 2008 (2 vydanie) 							
Course language: Slovak								
Notes:								
Course assessm Total number of	ent f assessed stude	nts: 9						
А	В	С	D	Е	FX			
44.44	44.44	11.11	0.0	0.0	0.0			
Provides: doc. I	RNDr. Daniel K	lein, PhD.						
Date of last mo	dification: 27.(01.2022						

University: P. J. Šafa	árik University in Košice
Faculty: Faculty of S	Science
Course ID: ÚINF/ NEU1/15	Course name: Neural networks
Course type, scope a Course type: Lectu Recommended cou Per week: 2 / 1 Per Course method: pr	and the method: are / Practice arse-load (hours): • study period: 28 / 14 resent
Number of ECTS ci	redits: 5
Recommended sem	ester/trimester of the course: 3.
Course level: II.	
Prerequisities:	
Conditions for cour Successful realization completion of two networks and the c Demonstration of kn	se completion: on of a project focused on the applications of neural networks. Successful written tests at 60% which are focused on various architectures of neural onnections with other areas of computer science - automata, fuzzy logic. owledge focused on neural network methods and their application in the exam.
Learning outcomes: Knowledge of basic networks in various algorithmic problem	c paradigms of neural networks. Knowledge about applications of neural s fields. Ability to assess the applicability of neural networks in solving s.
 Brief outline of the 1. Motivational example objects, and 2. Computational point neural networks. Classical layer neural networks. Classical layer neural neural neural networks. Recurrent neural neural neural neural neural networks with approximations networks. Written test I. Nautomaton, recurrent neural neural neural networks. 	course: Inples. Mathematical model of neuron and neural network. Perceptrons. Linear laptation process (learning), perceptron convergence, multiple perceptrons. wer of single input neural networks, neuromata. Simulation of automata using ural networks, hidden neurons, adaptation process (learning), feedback method l its variants. networks, algorithm for training recurrent networks. Examples of use. of neural networks and Kohonen neural networks, learning algorithm, use. local neurons, RBF networks, networks with semi - local units. RBF
 networks. 8. Convolutional neu for image processing 9. Deep neural networks 10. Graph neural net 11. Deductive system 	ural networks. Basic knowledge of convolution. Convolutional neural networks g. orks and their use. works, structure, learning and applications. ns of fuzzy logic. Fuzzy neural networks and their use. Fuzzy controller.

12. Universal approximation using neural networks, Kolmogorov theorem. Approximation properties layered neural networks.

13. Solving practical problems using neural networks.

14. Written test II. Convolution and convolutional neural networks, deep neural networks, graph neural networks, construction of fuzzy regulator, Kolmogorov theorem and idea of its proof.

Recommended literature:

1. Y. Bengio: Learning Deep Architectures for AI, Foundations and Trends in ML, Vol. 2, No. 1 , 2009, pp. 1-127 $\#\!\!\!/$

2. I. Goodfellow, Y. Bengio and A. Courville: Deep Learning, MIT Press book, 2016, ISBN-13: 978-0262035613

https://www.deeplearningbook.org/ ##

3. M. H. Hassoun: Fundamentals of artificial neural networks. MIT Press, Cambridge, 1995. ## 4. J. Hertz, A. Krogh, R.G. Palmer: Introduction to the theory of neural computation, Addison-Wesley, 1991. ##

5. V. Kvasnička a kol.: Úvod do teórie neurónových sietí, IRIS, Bratislava, 1997. ##

6. P. Sinčák, G. Andrejková: Neurónové siete. I. diel: Dopredné siete, II. diel: Rekurentné a modulárne siete, Košice, 1997. ##

7. J. Šíma, R. Neruda: Teoretické otázky neuronových sití, Matfyzpress, MFF UK, Praha, 1996. ##

8. F. Scarselli, M. Gori, Ah Ch. Tsoi, M. Hagenbuchner, and G. Monfardini: The Graph Neural Network Model. IEEE TRANSACTIONS ON NEURAL NETWORKS, VOL. 20, NO. 1, JANUARY 2009 ##

Course language:

Slovak or English

Notes:

For ERASMUS students:

It is necessary to know a model of artificial neurons, its computation and its setting, layered neural networks and backpropagation training algorithm.

Course assessment

Total number of assessed students: 244

А	В	С	D	Е	FX
18.85	15.57	24.59	19.26	17.21	4.51

Provides: doc. RNDr. L'ubomír Antoni, PhD., doc. RNDr. Gabriela Andrejková, CSc.

Date of last modification: 20.09.2021

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ PDB1/15	Course name: Organization and data processing
Course type, scope a Course type: Lectur Recommended cou Per week: 2 / 1 Per Course method: pro	ind the method: re / Practice rse-load (hours): study period: 28 / 14 esent
Number of ECTS cr	edits: 4
Recommended seme	ester/trimester of the course: 1.
Course level: II.	
Prerequisities:	
Conditions for cours Conditions for the fin final test	se completion: nal evaluation:
Learning outcomes: To understand the pr when solving optimiz	rinciples of database management systems. To be able to use the knowledge zation problems over big data and managing parallel and distributed databases.
 Brief outline of the of 1. Data representation 2. Tree-based indexin 3. Working with lower 4. Creation of cluster 5. Hash-based indexin 6. Enumeration of ref 7. Case study: practice 8. Transaction manage 9. Crash recovery 10. Parallel databases 11. Distributed databases 11. Distributed databases 11. Distributed databases 12. Distributed databases 13. R. RAMAKRISHIE Education, 2003 	n, disk and file organization, ng methods B+tree, R-tree, -level classes to working with files red and unclustered indexes ng methods, external sorting, lational operators, query optimization, cal DB optimalization gement, s, evaluation of relational operators in parallel databases bases, evaluation of relational operators in distributed databases, database sistency, recovery management in distributed database, distributed trasactions, replicas ature: NAN, J. GEHRKE: Database Management Systems, McGraw Hill Higher
2. A. SILBERSCHA Hill Higher Educatio	TZ, H. F. KORTH, S. SUDARSHAN: Database system concepts, McGraw n, 2006
Course language: Slovak or English	
Notes: Content prerequisitie	es: SQL language (DBS1a), basics of programming (PAZ1a)

Course assessn Total number o	nent f assessed studen	ts: 129					
A B C D E FX							
28.68	20.93 14.73 11.63 21.71 2.33						
Provides: RNDr. Peter Gurský, PhD.							
Date of last modification: 04.01.2022							
Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.							

University: P. J. Šafá	University: P. J. Šafárik University in Košice					
Faculty: Faculty of S	cience					
Course ID: ÚINF/ PDS1/21	Course ID: ÚINF/ PDS1/21Course name: Parallel and distributed systems					
Course type, scope a Course type: Lectur Recommended cou Per week: 2 / 2 Per Course method: pro	and the method: re / Practice rse-load (hours): study period: 28 / 28 esent					
Number of ECTS cr	redits: 5					

Recommended semester/trimester of the course: 2.

Course level: II., N

Prerequisities:

Conditions for course completion:

Home assignments, class project from tutorials, midterm written exam. Final written and oral exam.

Learning outcomes:

Understand the principles, basic problems and algorithms of parallel programming. Be able to implement synchronization procedures and manage and use interprocess communication. Master the basics of GPU programming. Understand the differences between parallel and distributed computational models. Master basic distributed algorithms and know how to implement them. Understand the problems of creating a distributed system environment and know how to solve them. Be able to use distributed environments in practical applications.

Brief outline of the course:

Parallel architectures, parallel computational model, access to shared memory. Basic algorithms, scaling, optimality. Effective methods of parallel search and sorting. Working in a GPU environment. Distributed computational model, communication protocols, characteristics of distributed systems. Intercomputer communication, distributed synchronization algorithms, transactions, termination and deadlock detection. Consistency issues with distributed memory sharing. Distributed application environment. Reliable calculations in an environment with errors.

Recommended literature:

1. J. JáJá: An Introduction to Parallel Algorithms, Addison-Wesley, 1992, ISBN 0-201-54856-9

2. P. Sanders, K. Mehlhorn, M. Dietzfelbinger, R. Dementiev: Sequential and Parallel Algorithms and Data Structures, Springer, 2019

- 3. Sukumar Ghosh: Distributed Systems and Algorithms (Second Edition), CRC Press 2014
- 4. M. Raynal: Distributed Algorithms for Message-Passing Systems, Springer, 2013
- 5. Gerard Tel: Introduction to Distributed Algorithms, Cambridge University Press, 2001

Course language:

Slovak or English

Notes:

Content prerequisities: basic of concurrent programming, basic of operating system principles

Course assessm Total number o	nent f assessed studen	ts: 47					
А	A B C D E FX						
19.15	6.38 17.02 17.02 25.53 14.89						
Provides: doc. RNDr. Jozef Jirásek, PhD., RNDr. Rastislav Krivoš-Belluš, PhD., Bc. Marián Dvorský, RNDr. Ladislav Mikeš, PhD.							
Date of last modification: 23.11.2021							
Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.							

University: P. J. Šafá	University: P. J. Šafárik University in Košice						
Faculty: Faculty of S	Faculty: Faculty of Science						
Course ID: ÚINF/ PDSI1/15	Course name: Pro-seminar to diploma thesis in informatics						
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present						
Number of ECTS cr	edits: 2						
Recommended seme	ster/trimester of the cours	e: 1.					
Course level: II.							
Prerequisities:							
Conditions for cours Evaluation of the stud Evaluation of the ach basis of his / her repo	e completion: dent's paper with a focus on nieved results of the student ort and the created diploma v	the issue of the diploma thesis. during the semester on the diploma thesis on the vebsite.					
Learning outcomes: To inform students about areas of informatics they are suitable to work in diploma theses. In the end of semester students have to prepared themes of diploma theses, goals and recommended study literature.							
Brief outline of the c The seminar is orient	Brief outline of the course: The seminar is oriented to problems prospective to preparations of Diploma theses.						
Recommended litera 1. MEŠKO, D., KAT 2004. 316 s. ISBN 80 2. ISO 690: 1987 Do 3. ISO 2145: 1978 Do documents. 4. Eco, U.: Jak napsa Olomouc, Votobiax. 5. Professional and so recommendation of the	ture: UŠČÁK, D. Akademická pr D-8063-150-6 cumentation - Bibliographic ocumentation - Numbering t diplomovou práci, z taliand cientific literature related to he thesis supervisor.	ríručka. 1. vyd. Vydavateľstvo Osveta : Martin, references. Content, form and structure. of divisions and subdivisions in written činy Come si fa una tesi di laures, Milano, 1977, the diploma thesis according to the					
Course language: Slovak or English							
Notes:							
Course assessment Total number of asses	ssed students: 90						
	abs	n					
	97.78 2.22						

Provides: doc. RNDr. Jozef Jirásek, PhD., doc. RNDr. Ondrej Krídlo, PhD.

Date of last modification: 08.01.2022

University: P. J. Šafárik	University in Košice
Faculty: Faculty of Scien	nce
Course ID: KPPaPZ/PPZMg/12Co	urse name: Psychology and Health Psychology (Master's Study)
Course type, scope and the Course type: Lecture / 1 Recommended course- Per week: 1 / 2 Per stud Course method: presen	the method: Practice load (hours): dy period: 14 / 28 t
Number of ECTS credit	s: 4
Recommended semester	r/trimester of the course:
Course level: II.	
Prerequisities:	
Conditions for the contin Active work (maximum : Preparation, presentation Written examination (ma Conditions for admission Conditions for the final a Exam: written form (max Conditions for successf assignments and at least Detailed information in subject will be realized b	 auous assessment during the semester: 5 points, 2 absences are allowed). and discussion on a selected topic - max. 15 points. ximum 30 points). a to the exam: min. 25 points. assessment: a. 50 points, min. 25 points) a completion of the course: participation in lessons, fulfillment of 66 points from the overall evaluation. the electronic bulletin board of the course in AIS2. The teaching of the y a combined method.
Learning outcomes: The student will underst salutogenic factors as well the knowledge especially health in the work of a te	tand the basic concepts and theories of health psychology, can explain Il as the consequences of risk behavior related to health. He is able to apply y in the field of prevention of burnout syndrome and support of mental acher.
Brief outline of the cour 1 Introduction to health p 2 Psychoimmunology 3 Personality factors and 4 Social support as a prot 5 Subjective well-being 6 Stress and stressful situ 7 Burnout syndrome 8 Health-promoting beha 9 Health risk behavior 10 School as an importar	se: psychology health tective factor in relation to health nations and ways to manage them evior, mental hygiene ht factor of health
Recommended literatur Křivohlavý, J.: Psycholog	e: gie zdraví. Portál, Praha 2001.

Křivohlavý, J.: Psychologie nemoci. Grada, Praha, 2002.

Křivohlavý, J.: Psychologie moudrosti a dobrého života. Grada, Praha, 2009.

Kebza, V.: Psychosociální determinanty zdraví. Academia, Praha 2005.

Kahneman, D., Diener, E., Schwarz, N.(Eds), Well-Being. The Foundations of Hedonic

Psychology. New York, Russell Sage Foundation, 2003.

Kaplan, R. M.: Zdravie a správanie človeka. SPN, Bratislava 1996.

Sarafino, E. P.: Health Psychology. Biopsychosocial interactions. John Wiley and sons 1994.

Baštecký, J., Šavlík, J., Šimek, J. 1993. Psychosomatická medicína. Praha: Grada

Tress, W., Krusse, J., Ott, J.: Základní psychosomatická péče. Portál, Praha 2008.

Course language:

slovak

Notes:

Course assessment

Total number of assessed students: 226

А	В	С	D	Е	FX
19.47	25.22	25.66	13.27	15.93	0.44

Provides: PhDr. Anna Janovská, PhD., Mgr. Lucia Barbierik, PhD.

Date of last modification: 07.07.2021

University: P. J. Šafárik University in Košice
Faculty: Faculty of Science
Course ID: ÚTVŠ/ Course name: Seaside Aerobic Exercise ÚTVŠ/CM/13 Image: Seaside Aerobic Exercise
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:
Course level: I., II.
Prerequisities:
Conditions for course completion: Completion: passed Condition for successful course completion: - active participation in line with the study rule of procedure and course guidelines - effective performance of all tasks- aerobics, water exercise, yoga, Pilates and others
Learning outcomes: Content standard: The student demonstrates relevant knowledge and skills in the field, which content is defined in the course syllabus and recommended literature. Performance standard: Upon completion of the course students are able to meet the performance standard and: - perform basic aerobics steps and basics of health exercises, - conduct verbal and non-verbal communication with clients during exercise, - organise and manage the process of physical recreation in leisure time
 Brief outline of the course: Brief outline of the course: 1. Basic aerobics – low impact aerobics, high impact aerobics, basic steps and cuing 2. Basics of aqua fitness 3. Basics of Pilates 4. Health exercises 5. Bodyweight exercises 6. Swimming 7. Relaxing yoga exercises 8. Power yoga 9. Yoga relaxation 10. Final assessment Students can engage in different sport activities offered by the sea resort – swimming, rafting, volleyball, football, table tennis, tennis and other water sports in particular.
Recommended literature: 1. BUZKOVÁ, K. 2006. Fitness jóga. Praha: Grada. 167 s.

 ŽECHOVSKÁ, I., MILEROVÁ, H., NOVOTNÁ, V. Aqua-fitness. Praha: Grada. 136 s. EVANS, M., HUDSON, J., TUCKER, P. 2001. Umění harmonie: meditace, jóga, tai-či, strečink. 192 s. JARKOVSKÁ, H., JARKOVSKÁ, M. 2005. Posilováni s vlastním tělem 417 krát jinak. Praha: Grada. 209 s. KOVAŘÍKOVÁ, K. 2017. Aerobik a fitness. Karolium, 130 s. 		
Course language: Slovak language		
Notes:		
Course assessment Total number of assessed students: 54		
abs	n	
11.11 888.89		
Provides: Mgr. Agata Dorota Horbacz, PhD.		
Date of last modification: 29.03.2022		
Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.		

HDGE INFORMATION I FTTED

	COURSE INFORMATION LETTER
University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚINF/ BPD1/15	Course name: Security of computer systems and data
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 cro	edits: 5
Recommended seme	ster/trimester of the course: 3.
Course level: I., II.	
Prerequisities:	
Conditions for cours Homeworks, active p Final practical test, or	e completion: articipation in laboratory exercises. ral examination.
Learning outcomes: Familiarize with the availability of compu- computer system reso Gain the ability to cree to evaluate system an knowledge necessary security audit of infor	concepts, methods, and means to ensure the confidentiality, integrity, and iter systems assets. To control in more detail the issues of access control to purces, operating system security, program security, database systems security. eate security models, use cryptographic methods to ensure security, know how d communication security. By completing the course the student will gain the in the design of secure computer and information systems, risk analysis and rmation systems.
 Brief outline of the c Computer security User authentication vulnerabilities. Access control mod access monitoring and System security. management and mon Equipment for dig replication, archiving System startup (BI Management and r structure, metadata. Intel and ARM pr and paging support r 	ourse: concepts, information security, security policies for its individual components. principles, password generation and management, multifactor authentication, dels, access matrices, attribute models, multilevel models, reference monitors, d audit. System installation, update management, service configuration, resource nitoring, user administration, remote access, virtualization, hardening. gital data storage, coding, durability, confidentiality, integrity, availability, disposal. OS, UEFI), disk data organization, file systems and their vulnerabilities. nonitoring of processes, operating system services, executable files and their pocessor architecture, assembler, memory access organization, segmentation process execution support.

9. Malicious software, advanced persistence threat. Methods of system attacks, static analysis of potentially malicious software, countermeasures.

10. Dynamic analysis of malicious software, basics of disassembly techniques.

11. Mechanisms of attacks at the level of application programs, exceeding the allocated resources, code insertion, social engineering.

12. Vulnerabilities of database systems, security of requirements, inference channels, problems of cloud implementations, archiving and secure data deletion.

13. Secure software development, defensive programming, input validation, formal verification, OWASP principles for web application development.

Recommended literature:

1. STALLINGS, W.: Computer Security: Principles and Practice, 4.ed., Pearson, 2017, ISBN 978-0134794105

2. PFLEEGER, CH.,P.: Security in Computing. 4th ed. Prentice-Hall International, Inc., 2006, ISBN: 0-13-2390779

3. GOLLMANN, D.: Computer Security. John Wiley & Sons, 2011, ISBN: 0-470-741155.

Course language:

Slovak or English

Notes:

Course assessment

Total number of assessed students: 44

А	В	С	D	Е	FX
22.73	22.73	18.18	18.18	18.18	0.0
Provides: doc. RNDr. Jozef Jirásek, PhD., RNDr. Rastislav Krivoš-Belluš, PhD.					

Date of last modification: 23.11.2021

University: P. J. Šafá	rik University in Košice		
Faculty: Faculty of S	cience		
Course ID: ÚINF/ SDI1a/15	Course ID: ÚINF/ Course name: Seminar to diploma theses in informatics DI1a/15		
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent		
Number of ECTS cr	edits: 2		
Recommended seme	ster/trimester of the cours	e: 2.	
Course level: II.			
Prerequisities: ÚINF	P/PDSI1/15		
Conditions for cours Presentation of the antasks, editing of the v	e completion: alysis of the assignment and veb page, written elaboration	the proposal of the solution of the diploma thesis n of the analysis and design of the solution.	
Learning outcomes: Monitoring and publi	c presentation of work done	so fare on thesis preparation	
Brief outline of the c The seminar serves f to be awarded the cre of the assignment and solution procedure, u written analysis and p	ourse: For control, public presentation edits, it is necessary to succe d the achieved results, inclu- update the presentation of the proposal for solving the assis	ion and defense of partial results at DP. In order essfully complete the presentation of the analysis ding the proposal of specific steps of the further he diploma thesis on the network and prepare a gned problem in the range of 15-20 pages.	
Recommended literated According to the topic	iture: c of diploma thesis.		
Course language: Slovak or English			
Notes:			
Course assessment Total number of asses	ssed students: 195		
abs n			
	95.38 4.62		
Provides:			
Date of last modifica	tion: 08.01.2022		
Approved: prof. RNI	Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.		

University: P. J. Šafárik University in Košice			
Faculty: Faculty of Science			
Course ID: ÚINF/ SDI1b/15	urse ID: ÚINF/ Course name: Seminar to diploma theses in informatics I1b/15		
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent		
Number of ECTS cr	edits: 2		
Recommended seme	ster/trimester of the course	e: 3.	
Course level: II.			
Prerequisities: ÚINF	/SDI1a/15		
Conditions for course completion: Presentation of achieved results on the diploma thesis, web page modification, written processing of results.			
Learning outcomes: Monitoring and publi	c presentation of work done	so fare on thesis preparation	
Brief outline of the course: Every thesis has a compulsory theoretical part and may also contain a software part. To gain recognition, the following is necessary: a detailed compilation of studied literature (a minimum of thirty pages) and at least twenty pages of text containing the candidate's own views of the problem area, possible research goals, own results are welcome (if the thesis is purely theoretical, this will be judged more strictly). For the SW part: a tested implementation (must conform to user requirements, help and user friendly user interface not necessary at this stage) and access to source texts. For both parts there will be an oral presentation and discussion			
Recommended literature: According to the topic of diploma thesis			
Course language: Slovak or English			
Notes:			
Course assessment Total number of assessed students: 175			
abs n			
	99.43 0.57		
Provides:			
Date of last modification: 08.01.2022			
Approved: prof. RNI	Dr. Gabriel Semanišin, PhD.	, prof. RNDr. Ivan Žežula, CSc.	

University: P. J. Šafá	rik University in Košice			
Faculty: Faculty of S	cience			
Course ID: ÚINF/ SDI1c/15	Course name: Seminar to diploma theses in informatics			
Course type, scope a Course type: Practic Recommended cou Per week: 2 Per stu Course method: pre	Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present			
Number of ECTS cr	edits: 2			
Recommended seme	ster/trimester of the cours	e: 4.		
Course level: II.				
Prerequisities: UINF	5/SDI1b/15			
Conditions for cours Presentation of the a web page.	e completion: chieved results of the diplo	ma thesis with a discussion. Final editing of the		
Learning outcomes: Monitoring and public	ic presentation of work done	e so fare on thesis preparation		
Brief outline of the c The seminar serves awarded the credits, the discussion, togeth	fourse: for control, public presenta it is necessary to complete a ner with the final presentatio	ation and defense of DP results. In order to be a public presentation of the work associated with n of the presentation on the Internet.		
Recommended litera According to the topic	iture: c of diploma thesis.			
Course language: Slovak or English				
Notes:				
Course assessment Total number of asse	ssed students: 159			
abs n				
	100.0 0.0			
Provides:	Provides:			
Date of last modifica	tion: 08.01.2022			
Approved: prof. RNI	Dr. Gabriel Semanišin, PhD.	, prof. RNDr. Ivan Žežula, CSc.		

University: P. J. Šafá	rik Univers	ity in Košice	
Faculty: Faculty of S	cience		
Course ID: KPPaPZ/SPVKE/07	Course name: Social-Psychological Training of Coping with Critical Life Situations		
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the met ce rse-load (h dy period: esent	thod: ours): 28	
Number of ECTS cr	edits: 2		
Recommended seme	ster/trimes	ster of the course: 2.	
Course level: II.			
Prerequisities:			
Conditions for cours	e completi	on:	
Learning outcomes:			
Brief outline of the c	ourse:		
Recommended litera	iture:		
Course language:			
Notes:			
Course assessment Total number of assessed students: 126			
abs		n	Z
97.62	52 2.38 0.0		
Provides: Mgr. Ondrej Kalina, PhD.			
Date of last modifica	tion: 24.06	5.2022	
Approved: prof. RNI	Dr. Gabriel	Semanišin, PhD., prof. RNDr. Iva	n Žežula, CSc.

University: P. J. Šafá	rik University in Košice	
Faculty: Faculty of S	cience	
Course ID: ÚTVŠ/ TVa/11	Course name: Sports Activities I.	
Course type, scope a Course type: Practi- Recommended cou Per week: 2 Per stu Course method: pre	and the method: ce rse-load (hours): ady period: 28 esent	
Number of ECTS cr	edits: 2	
Recommended seme	ster/trimester of the course: 1.	
Course level: I., I.II.,	II.	
Prerequisities:		

Conditions for course completion:

Min. 80% of active participation in classes.

Learning outcomes:

Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.

Brief outline of the course:

Brief outline of the course:

Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess.

In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.

Recommended literature:

BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571 BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.

JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.

KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.

KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345. LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902. SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141. STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.

VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:

Slovak language

Notes:

Course assessment

Total number of assessed students: 14548

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
86.46	0.07	0.0	0.0	0.0	0.05	8.41	5.02

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

Date of last modification: 29.03.2022

University: P. J. Šafá	rik University in Košice		
Faculty: Faculty of S	cience		
Course ID: ÚTVŠ/ Course name: Sports Activities II. Vb/11			
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: 2.		
Course level: I., I.II.,	II.		
Prerequisities:			
Conditions for cours active participation in	se completion: n classes - min. 80%.		
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. pact on physical fitness and performance. Specialization in sports activities strengthen their relationship towards the selected sport in which they also		
Brief outline of the c Within the optional s University provides badminton, body form 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 In addition to these physical education tra the premises of the fac	ourse: ubject, 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 oordination abilities, physical performance, and motor performance fitness. e important role of sports activities is to eliminate swimming illiteracy and by ogram of medical physical education to influence and mitigate unfitness. sports, the Institute offers for those who are interested winter and summer ainings with an attractive program and organises various competitions, either at culty or University or competitions with national or international participation.		
Recommended litera BENCE, M. et al. 20 [online] Dostupné na BUZKOVÁ, K. 2006 8024715252.	i ture: 05. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. : https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571 5. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN		

JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.

KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.

KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.
LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902. SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141. STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.

VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:

Slovak language

Notes:

Course assessment

Total number of assessed students: 13211

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
84.35	0.51	0.02	0.0	0.0	0.05	10.78	4.29

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

Date of last modification: 29.03.2022

University: P. J. Šafá	rik University in Košice				
Faculty: Faculty of Science					
Course ID: ÚTVŠ/ TVc/11	Course name: Sports Activities III.				
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 edits: 2				
Recommended seme	ster/trimester of the course: 3.				
Course level: I., I.II.,	II.				
Prerequisities:					
Conditions for cours min. 80% of active p	e completion: 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. apact on physical fitness and performance. Specialization in sports activities strengthen their relationship towards the selected sport in which they also				
Brief outline of the c 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 In addition to these physical education tra the premises of the fac	ourse: ubject, 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 oordination abilities, physical performance, and motor performance fitness. e important role of sports activities is to eliminate swimming illiteracy and by ogram of medical physical education to influence and mitigate unfitness. sports, the Institute offers for those who are interested winter and summer unings with an attractive program and organises various competitions, either at culty or University or competitions with national or international participation.				
BENCE, M. et al. 20 [online] Dostupné na	05. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. : https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571				

BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.

JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.

KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.

KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.

LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902. SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141. STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.

VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:

Slovak language

Notes:

Course assessment

Total number of assessed students: 8879

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
88.62	0.07	0.01	0.0	0.0	0.02	4.25	7.03

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

Date of last modification: 29.03.2022

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚTVŠ/ TVd/11	Course name: Sports Activities IV.
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., I.II.,	II.
Prerequisities:	
Conditions for cours min. 80% of active pa	e completion: 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 pact on physical fitness and performance. Specialization in sports activities strengthen their relationship towards the selected sport in which they also
Brief outline of the c Within the optional s University provides badminton, body form 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 In addition to these physical education tra the premises of the fac	ourse: ubject, 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 oordination abilities, physical performance, and motor performance fitness important role of sports activities is to eliminate swimming illiteracy and by ogram of medical physical education to influence and mitigate unfitness. sports, the Institute offers for those who are interested winter and summer ainings with an attractive program and organises various competitions, either a culty or University or competitions with national or international participation
Recommended litera BENCE, M. et al. 200 [online] Dostupné na	i ture: 05. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. ; https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571

BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.

JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.

KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.

KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.

LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902. SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141. STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.

VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:

Slovak language

Notes:

Course assessment

Total number of assessed students: 5628

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
82.66	0.28	0.04	0.0	0.0	0.0	8.05	8.97

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

Date of last modification: 29.03.2022

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚMV/ NPR/19	Course name: Stochastic processes
Course type, scope a Course type: Lectur Recommended cour Per week: 3 / 2 Per Course method: pre	nd 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: 2.
Course level: II.	
Prerequisities:	
Conditions for cours Total evaluation base At least 50% must be Final evaluation: ≥90	e completion: d on a written test (30p) + individual project work (30p) and oral exam (40p). obtained from each part. % A; \geq 80% B; \geq 70% C; \geq 60% D; \geq 50% E; <50% FX.
Learning outcomes: To obtain knowledge domain. To study properties o their application in fi To obtain skills in tim	of the stationary stochastic processes analysis in time domain and spectral f random processes with discrete time (time series) and continuous time and nance. ne series analysis with software R.
Brief outline of the c 12. Stationary prece 3. Causal and invertil 4. Time domain analy 5. Sample characteris 67. Frequency doma 8. Prediction of time 9. Random processes 10. Brownian motion 1112. The Black-Sc	ourse: ss, linear process. ble process. vsis (autocovariance, autocorrelation and partial autocorrelation function). tic of time series and their properties. ain analysis (spectral density and distribution function, periodogram). series. with continuous time (fundamental concepts). , Itô's process, Itô's lemma and its application. holes formula.
Recommended litera 1. Brockwell P., Davi York, 2016 2. Prášková Z.: Zákla 3. Tsay R.: Analysis o 4. Shumway R., Stoff Springer, New York, 5. Melicherčík I., Olš 2005 (in Slovak) 6. Oksendal B.K.: Sto	ture: s R.: Introduction to Time Series and Forecasting, 3rd ed., Springer, New dy náhodných procesů II, Karolinum, Praha, 2004 (in Czech) of Financial Time Series, 3rd ed., Wiley Interscience, New Jersey, 2010 fer D.: Time Series Analysis and Its Applications with R Examples, 4th ed., 2017 arová L., Úradníček V.: Kapitoly z finančnej matematiky, Epos, Bratislava, ochastic Differential Equations, 6th ed., Springer, 2014

Course language: Slovak

Notes:

The students are required to have basic knowledge about random vectors and their characteristics, conditional distribution, estimation theory and hypothesis testing.

	,	5 5	θ ¹ θ		
Course assessm	nent				
Total number o	f assessed studen	ts: 78			
А	В	С	D	Е	FX
39.74	23.08	17.95	10.26	6.41	2.56
Provides: doc. RNDr. Martina Hančová, PhD.					
Date of last modification: 19.04.2022					
Approved: prof. RNDr. Gabriel Semanišin, PhD., prof. RNDr. Ivan Žežula, CSc.					

University: P. J. Šafán	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚTVŠ/ LKSp/13	Course name: Summer Course-Rafting of TISA River
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: se se-load (hours): dy period: 28 sent
Number of ECTS cro	edits: 2
Recommended semes	ster/trimester of the course:
Course level: I., II.	
Prerequisities:	
Conditions for cours Completion: passed Condition for success - active participation - effective performance paddling	e completion: ful course completion: in line with the study rule of procedure and course guidelines ce of all tasks: carrying a canoe, entering and exiting a canoe, righting a canoe,
Learning outcomes: Content standard: The student demonstr course syllabus and re Performance standard Upon completion of t - implement the acqui - implement basic ski - determine the right s - prepare a suitable m	ates relevant knowledge and skills in the field, which content is defined in the ecommended literature. I: he course students are able to meet the performance standard and: ired knowledge in different situations and practice, Ils to manipulate a canoe on a waterway, spot for camping, aterial and equipment for camping.
 Brief outline of the constraints Safety rules for rafing Setting up a crew Practical skills traints Canoe lifting and constraints Canoe lifting and constraints Canoe lifting and constraints Putting the canoe in the canoe Exiting the canoe on the pry stroke (on b) The draw stroke 	burse: burse: liculty of waterways ting hing using an empty canoe arrying h the water without a shore contact e ut of the water fast waterways)

11.	Capsizing	

12. Commands

Recommended literature:

1. JUNGER, J. et al. Turistika a športy v prírode. Prešov: FHPV PU v Prešove. 2002. ISBN 8080680973.

Internetové zdroje:

1. STEJSKAL, T. Vodná turistika. Prešov: PU v Prešove. 1999.

Dostupné na: https://ulozto.sk/tamhle/UkyxQ2lYF8qh/name/Nahrane-7-5-2021-v-14-46-39#! ZGDjBGR2AQtkAzVkAzLkLJWuLwWxZ2ukBRLjnGqSomICMmOyZN==

Course language:

Slovak language

Notes:

Course assessment

Total number of assessed students: 209

abs	n
37.32	62.68

Provides: Mgr. Dávid Kaško, PhD.

Date of last modification: 29.03.2022