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COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: CJP/ PFAJAKA/07	Course name: Academic English
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: combined, present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II., N	
Prerequisites:	
Conditions for course completion: Active classroom participation, assignments handed in on time, 2 absences tolerated 1 test (10th week), no retake. Presentation on chosen topic Final evaluation- average assessment of test (40%), essay (30%) and presentation (30%). Grading scale: A 93-100%, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64% and less	
Learning outcomes: The development of students' language skills - reading, writing, listening, speaking, improvement of their linguistic competence - students acquire knowledge of selected phonological, lexical and syntactic aspects, development of pragmatic competence - students can effectively use the language for a given purpose, with focus on Academic English, level B2.	
Brief outline of the course: Formal and informal English Academic English and its specific features Key academic verbs and nouns Linking words in academic writing, writing a paragraph, word-order, topic sentences Word-formation - affixation abstract Selected aspects of English pronunciation, academic vocabulary Selected functional grammar structures - defining, classifying, expressing opinion, cause-effect, paraphrasing	
Recommended literature: Seal B.: Academic Encounters, CUP, 2002 T. Armer :Cambridge English for Scientists, CUP 2011 M. McCarthy M., O'Dell F. - Academic Vocabulary in Use, CUP 2008 Zemach, D.E, Rumisek, L.A: Academic Writing, Macmillan 2005 Olsen, A. : Active Vocabulary, Pearson, 2013 www.bbclearningenglish.com Cambridge Academic Content Dictionary, CUP, 2009	

Course language: English language, level B2 according to CEFR.					
Notes:					
Course assessment Total number of assessed students: 400					
A	B	C	D	E	FX
34.75	22.0	15.75	9.5	6.25	11.75
Provides: Mgr. Viktória Mária Slovenská					
Date of last modification: 19.09.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/PPPy/18	Course name: Advanced programming in Python
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 6.	
Course level: I., N	
Prerequisites: ÚINF/PAZ1a/15	
Conditions for course completion: At least 50 % of the marks in the continuous assessment A minimum of 50 % marks in the mid-term and end-of-semester practical tests or The final project - 100%	
Learning outcomes: Implement solutions to selected problems in Python using available modules. Use and implement non-trivial algorithms to solve selected problems. Use an object-oriented approach to problem solving. Program in Python in an object-oriented manner using Python specifics. Test programs. Implement parallel computing.	
Brief outline of the course: 1. Introduction to the environment, basic features of Python, simple and structured data types. 2. Input, output, function definition, lambda function, generator notation, function as parameter, string formatting. 3. Control structures, iterating over data structures, context manager. 4. Exception handling and exception raising. Philosophy of exceptions in Python. 5. Working with files. Serialization and deserialization of data - json and pickle protocol. Text and binary files. Manipulation with files. Open data. 6. Object-oriented programming 1. Design of custom classes, special methods, properties, philosophy of accessing methods and attributes. 7. Object-oriented programming 2. Comparison and differences with Java. Multiple inheritance. 8. Method overloading. Static methods, abstract classes, data class. 9. Decorators, memoization, modules, packages. 10. Code validation (debugging), testing (doctest, unittest), test-driven development. 11. Parallel computing, processes, process triggering and inter-process communication (shared variable, pipe, queue). 12. Graphical program design and implementation.	
Recommended literature: PILGRIM, Mark. Dive into Python 3. 2. United States of America: Apress, 2004. ISBN 978-1430224150. Dostupné také z: https://diveintopython3.net/	

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

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

Course language:

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

Notes:

Course assessment

Total number of assessed students: 65

A	B	C	D	E	FX
7.69	13.85	18.46	18.46	24.62	16.92

Provides: PaedDr. Ján Guniš, PhD.

Date of last modification: 10.02.2022

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ ALGa/10		Course name: Algebra I			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 3 / 3 Per study period: 42 / 42 Course method: present					
Number of ECTS credits: 7					
Recommended semester/trimester of the course: 1.					
Course level: I.					
Prerequisites:					
Conditions for course completion: According to the results from the semester and in view of the results of the written and oral final exam..					
Learning outcomes: To acquire the methods of mathematical thinking and cognition. Gain basic knowledge of number theory related to divisibility, master the basic concepts of linear algebra and be able to apply them to specific problems and mathematical problems.					
Brief outline of the course: Divisibility in \mathbb{Z} . Fields. Systems of linear equations, Gauss elimination. Maps, permutations. Computing with matrices. Determinants, Cramer rule.					
Recommended literature: T. Katriňák a kol.: Algebra a teoretická aritmetika 1, Alfa Bratislava, 1985. T.S Blyth, E.F. Robertson: Basic linear algebra, Springer Verlag, 2001. K. Jänich: Linear algebra, Springer Verlag, 1991.					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 1369					
A	B	C	D	E	FX
11.91	11.83	18.99	18.41	28.12	10.74
Provides: prof. RNDr. Danica Studenovská, CSc., RNDr. Igor Fabrici, Dr. rer. nat., RNDr. Lucia Janičková, PhD., Mgr. Ivana Varga					
Date of last modification: 16.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ ALG2b/10		Course name: Algebra II			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 4 / 2 Per study period: 56 / 28 Course method: present					
Number of ECTS credits: 7					
Recommended semester/trimester of the course: 2.					
Course level: I.					
Prerequisites: ÚMV/ALGa/10					
Conditions for course completion: According to tests and to the exam.					
Learning outcomes: To acquire the methods of mathematical thinking and cognition. To deepen and expand students' knowledge of systems of linear equations, to acquire basic knowledge about vector spaces, linear representations, polynomials and polynomial equations.					
Brief outline of the course: Linear spaces, bases. Rank of a matrix. Systems of homogeneous linear equations. Linear transformations. Ring, fields. Polynomials over a field. Factorization into irreducible factors, roots. Roots of complex numbers. Cubic equations. Polynomials with several unknowns, symmetric polynomials.					
Recommended literature: A. Kurosh: Higher Algebra, Mir Publishers, 1975.					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 221					
A	B	C	D	E	FX
22.62	17.19	16.74	14.03	25.34	4.07
Provides: prof. RNDr. Danica Studenovská, CSc., RNDr. Lucia Janičková, PhD.					
Date of last modification: 24.11.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ ALG3b/10		Course name: Algebra II for informaticians and physicists			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 4 / 2 Per study period: 56 / 28 Course method: present					
Number of ECTS credits: 7					
Recommended semester/trimester of the course: 4.					
Course level: I., II.					
Prerequisites: ÚMV/ALGa/10					
Conditions for course completion: Exam					
Learning outcomes: To provide deeper knowledge on vector spaces, linear transformations and Euclidean spaces.					
Brief outline of the course: Vector spaces, subspaces. A basis, a dimension and a characterization of n-dimensional vector spaces. The rank of a matrix. Linear transformations and their matrices. Operations with linear transformations, matrices of sums and compositions of linear transformations. Regular linear transformations, regular matrices. Similar matrices. Characteristic vectors and characteristic values of linear transformations. Affine spaces, subspaces and their positions. Euclidean spaces, the distance of subspaces. Conics and quadrics.					
Recommended literature: A. F. Beardon: Algebra and Geometry, Cambridge University Press, 2005 G. Birkhoff, S. Mac Lane: A Survey of Modern Algebra, New York 1965					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 317					
A	B	C	D	E	FX
15.77	10.41	12.93	18.93	32.18	9.78
Provides: doc. RNDr. Roman Soták, PhD., Mgr. Martin Vodička					
Date of last modification: 26.03.2020					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ATC/10		Course name: Algebra and number theory			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present					
Number of ECTS credits: 4					
Recommended semester/trimester of the course: 4.					
Course level: I.					
Prerequisites: ÚMV/ALG2b/10					
Conditions for course completion: It is based on the results of written checks carried out during the semester. Final evaluation is based on the results of written checks carried out during the semester, of test, written and oral exam.					
Learning outcomes: Obtain basic knowledge about groups and from the elementary number theory.					
Brief outline of the course: Groups, subgroups, quotient groups, homomorphism theorems for groups, selected topics of the number theory.					
Recommended literature: G.Birkoff, S.Mac Lane: A Survey of Modern Algebra, New York 1965 I.R. Shafarevich: Basic Notions of Algebra, Springer, 2005					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 196					
A	B	C	D	E	FX
13.78	20.41	26.02	21.94	14.8	3.06
Provides: doc. RNDr. Miroslav Ploščica, CSc.					
Date of last modification: 08.02.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ ASU1/15	Course name: Algorithms and data structures
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 4.	
Course level: I., N	
Prerequisites: ÚINF/PAZ1a/15 and ÚINF/PAZ1b/15	
Conditions for course completion: Practice activities, homeworks and midterm exam. Final examination consisting of practice and theoretical test.	
Learning outcomes: Understand and learn algorithmic paradigms and data structures. Analyse time complexity of these algorithms.	
Brief outline of the course: Algorithms' time and space asymptotic complexity. Main Theorem. Amortized complexity. Brute Force. Backtrack. Divide and Conquer. Dynamic programming. Comparison and non-comparison sort algorithms. Sweep line algorithms. Graph Theory Algorithms. Data structures – queue, stack, priority queue, heap, prefix sum, binary search trees, interval trees, union & find, trie.	
Recommended literature: 1, Laaksonen A.: Guide to Competitive Programming: Learning and Improving Algorithms Through Contests (Undergraduate Topics in Computer Science), Springer, 2017, ISBN 978-3319725468 2, Forišek M., Steinová M.: Explaining Algorithms Using Metaphors. Springer Briefs in Computer Science, Springer (2013), ISBN 978-1-4471-5018-3 3, R. Sedgewick, K. Wayne: Algorithms (4th Edition), Addison-Wesley Professional, 2011, ISBN 978-0321573513, http://algs4.cs.princeton.edu/home/ 4, Open Data Structures: http://opendatastructures.org/	
Course language: Slovak or english	
Notes: Content prerequisites: - programming skills in some programming language (Python/Java/C++/...) - mathematics: -- computing with polynomials, logarithmic and exponential functions -- computing limits of sequences, L'Hospital rule	

Course assessment					
Total number of assessed students: 184					
A	B	C	D	E	FX
13.59	4.35	16.85	25.0	36.96	3.26
Provides: RNDr. Rastislav Krivoš-Belluš, PhD.					
Date of last modification: 08.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KPE/ ALP/06		Course name: Alternative Education			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of ECTS credits: 2					
Recommended semester/trimester of the course: 4.					
Course level: I.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 318					
A	B	C	D	E	FX
69.18	25.16	2.83	0.63	0.31	1.89
Provides: Mgr. Katarína Petříková, PhD.					
Date of last modification: 20.06.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/APM/19		Course name: Applications of mathematics			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of ECTS credits: 2					
Recommended semester/trimester of the course: 6.					
Course level: I.					
Prerequisites:					
Conditions for course completion: Presentation on the chosen topic during the seminar.					
Learning outcomes: Students get an overview of applications of mathematics and its tools in various areas of human activity.					
Brief outline of the course: 1. Applications of graphs in analysis of complex networks, their central actors and their community structure. 2. Statistical methods used in shape recognition (geometric morphometrics, principal component analysis, linear regression) with application in the analysis of dinosaur skulls and other examples of the use of shape recognition in practice.					
Recommended literature: 1. E. A. Robinson, D. H. Ullmann: A mathematical look at politics, CRC Press, 2010. 2. U. Brandes, T. Erlebach: Network Analysis: Methodological Foundations (Lecture Notes in Computer Science, 3418), 2005. 3. Karchynskaya, V., Kopčáková, J., Klein, D., Gába, A., Madarasová-Gecková, A., van Dijk, J. P., de Winter, A. F. a Reijneveld, S. A. (2020). Is BMI a Valid Indicator of Overweight and Obesity for Adolescents? Int. J. Environ. Res. Public Health, 17, 4815.					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 19					
A	B	C	D	E	FX
78.95	21.05	0.0	0.0	0.0	0.0
Provides: RNDr. Andrej Gajdoš, PhD., doc. Mgr. Jozef Kiseľák, PhD., doc. RNDr. Daniel Klein, PhD., prof. RNDr. Tomáš Madaras, PhD., prof. RNDr. Katarína Cechlárová, DrSc.					

Date of last modification: 25.08.2022
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ APS1/15	Course name: Applied probability and statistics
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 5.	
Course level: I., II., N	
Prerequisites: ÚMV/FRPb/19 or ÚMV/MAN2c/22 or ÚMV/MTIb/21 or ÚMV/MTI4b/22 or ÚMV/MTFb/22	
Conditions for course completion: Demonstration of adequate mastery of the content standard of the subject in the ongoing and final evaluation, the ability to formulate a problem in the acquired terminology and solve it within a project. Written works during the semester, project. Written and oral exam.	
Learning outcomes: After completing the course, the student is able to apply the acquired concepts and techniques of probability theory and mathematical statistics in formulating hypotheses within the considered models and analysis of data dependencies, and use the appropriate software.	
Brief outline of the course: <ol style="list-style-type: none"> 1) Random event, probability and conditional probability. 2) Probability distribution laws. 3) Characteristics of position, variability and dependence. 4) Basic discrete and continuous distributions. 5) The law of large numbers and the central limit theorem. 6) Random sample. Initial analytical and geometric analysis of data. 7) Quantiles, basic distributions and basic theorem of mathematical statistics. 8) Theory of estimates, method of moments and maximum likelihood. Hypothesis testing. 9) Tests on distribution parameters and goodness-of-fit tests. 10) Modeling of dependencies and noise. Least squares method and smoothing. 11) Polynomial regression models. 12) Pseudorandom quantities and Monte Carlo methods. 	
Recommended literature: <ul style="list-style-type: none"> - Cs. Török: Úvod do teórie pravdepodobnosti a matematickej štatistiky, Košice, 1992 - M.R.Spiegel, J.J.Schiller, R.A.Srinivasan, Probability and Statistics, McGraw Hill, 2009 - J. Maindonald, W.J. Braun, Data Analysis and Graphics Using R – an Example-Based Approach, CAMBRIDGE UNIVERSITY PRESS, 2010 	

Course language: Slovak or english					
Notes: Face to face or online teaching. Content prerequisites: the basics of differential, integral and matrix calculus					
Course assessment Total number of assessed students: 90					
A	B	C	D	E	FX
16.67	15.56	24.44	12.22	30.0	1.11
Provides: doc. RNDr. Csaba Török, CSc.					
Date of last modification: 23.11.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ AFJ1a/15	Course name: Automata and formal languages
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 4.	
Course level: I., N	
Prerequisites:	
Conditions for course completion: Oral examination.	
Learning outcomes: To provide theoretical background for studying computer science in general, by giving the necessary knowledge in theory of automata.	
Brief outline of the course: 1: Chomsky hierarchy of grammars: alphabet, symbol (letter, character), transitive closure, word (string), empty word (empty string), length of a string, concatenation, language, grammar, nonterminal symbol, terminal symbol, initial nonterminal (initial symbol), grammar rule, derivation step, language generated by a grammar, Chomsky hierarchy of grammars - phrase-structure, context sensitive, context free, regular 2: Deterministic finite state automata: finite state automaton, state, input symbol, output symbol, initial state, transition function, output function, examples of automata and their graphic representation, generalized transition and output functions and their basic properties 3: Reduction of automata I: equivalent automata, minimal (optimal) automaton, reachable state, properties of reachable states, elimination of unreachable states 4: Reduction of automata II: equivalent states, k-equivalent states, properties of equivalence and k-equivalence, relation between k-equivalence and (k+1)-equivalence, partitioning the state set into equivalence classes, elimination of equivalent states 5: Reduction of automata III: proof of correctness, unambiguity, and optimality of reduced automaton, testing equivalence of two automata 6: Deterministic finite state acceptors: basic definitions, language recognized by a finite state acceptor, common properties of acceptors and automata with an output, minimizing a finite state acceptor 7: Operations with regular languages: complement, intersection, union, difference, symmetric difference, testing of emptiness, inclusion, equality, and disjointness for regular languages 8: Nondeterministic finite state acceptors: definition, transition function, language recognized by a nondeterministic acceptor, elimination of nondeterminism 9: epsilon-acceptors: definition, properties, elimination of epsilon-transitions	

10: Regular grammars: regular grammar, extended regular grammar, transformation of acceptor to a regular grammar, transformation of extended regular grammar to an epsilon-acceptor 11: Regular expressions I: basic properties, transformation of regular expression to an epsilon-acceptor 12: Regular expressions II: regular equations, valid algebraic manipulations with regular expressions, solving an equation with a single unknown variable, solving a system of regular equations, transformation of acceptor to a regular expression 13: Another constructions: review of transformations among various representations, an example of a direct transformation of a grammar to a regular expression, closure of the class of regular languages under another language operations – concatenation and Kleene star, mirror image 14: Another operations: homomorphism and inverse homomorphism, a context-free language that is not regular					
Recommended literature: J.E. Hopcroft, R.Motwani, J.D. Ullman: Introduction to automata theory, languages, and computation, Addison-Wesley, 2001. J. Shallit: A second course in formal languages and automata theory, Cambridge University press, 2009. M. Sipser: Introduction to the theory of computation, Thomson Course Technology, 2006.					
Course language: Slovak or English					
Notes:					
Course assessment Total number of assessed students: 895					
A	B	C	D	E	FX
26.59	18.21	23.46	17.09	9.83	4.8
Provides: prof. RNDr. Viliam Geffert, DrSc., RNDr. Dominika Pališínová, RNDr. Juraj Šebej, PhD.					
Date of last modification: 23.11.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ AFJ1b/15	Course name: Automata and formal languages
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 5.	
Course level: I., II.	
Prerequisites: ÚINF/AFJ1a/15	
Conditions for course completion: Test and oral examination.	
Learning outcomes: To provide theoretical background for studying computer science in general, by giving the necessary knowledge in theory of automata.	
Brief outline of the course: 1: Pushdown automata: definition of a pushdown automaton, accepting by final states, accepting by empty pushdown 2: Deterministic pushdown automata: examples of application in practice 3: Context-free grammars: basic definition, leftmost derivation, derivation tree, elimination of rules of type $A \rightarrow \epsilon$ and $A \rightarrow B$, Chomsky normal form 4: Relation between context-free grammars and pushdown automata: transforming context-free grammar to a pushdown automaton, transforming pushdown automaton to a context-free grammar 5: Pumping lemma I: Statement of the lemma and its proof 6: Pumping lemma II: applications of the lemma 7: Closure properties of context-free languages 8: Closure properties of deterministic context-free languages 9: Pushdown automata producing an output: basic definitions and properties, applications in practice 10: Context-sensitive languages: context-sensitive grammar, nondeterministic linear-bounded Turing machine (LBA), transforming context-sensitive grammar to an LBA, transforming LBA to a context-sensitive grammar 11: Closure properties of context-sensitive languages 12: Recursively enumerable languages: phrase-structure grammar, nondeterministic and deterministic Turing machine, transforming nondeterministic Turing machine to a phrase-structure grammar, transforming phrase-structure grammar to a deterministic Turing machine, closure properties 13: Universal Turing machine 14: Algorithmically undecidable problems of the formal language theory	
Recommended literature:	

1. J.E. Hopcroft, R.Motwani, J.D. Ullman: Introduction to automata theory, languages, and computation, Addison-Wesley, 2001.
2. J. Shallit: A second course in formal languages and automata theory, Cambridge University press, 2009.
3. M. Sipser: Introduction to the theory of computation, Thomson Course Technology, 2006.

Course language:

Slovak or English

Notes:

Content prerequisites:

1. Basic mathematical background (proof by contradiction and by mathematical induction), basic notions from the set theory (union, intersection, complement, cartesian product).
2. Basic knowledge about finite state automata and regular languages.

Course assessment

Total number of assessed students: 587

A	B	C	D	E	FX
37.82	16.87	19.25	17.38	6.13	2.56

Provides: prof. RNDr. Viliam Geffert, DrSc., Mgr. Alexander Szabari, PhD., RNDr. Juraj Šebej, PhD., RNDr. Dominika Pališínová

Date of last modification: 23.11.2021

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ BKP/14	Course name: Bachelor Project
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisites:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	
Course assessment Total number of assessed students: 7	
abs	n
100.0	0.0
Provides:	
Date of last modification:	
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/BPO/14	Course name: Bachelor Thesis and its Defence
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course:	
Course level: I.	
Prerequisites:	
Conditions for course completion: The bachelor thesis is the result of the student's own work. It must not show elements of academic fraud and must meet the criteria of good research practice defined in the Rector's Decision no. 21/2021, which lays down the rules for assessing plagiarism at Pavol Jozef Šafárik University in Košice and its components. Fulfillment of the criteria is verified mainly in the supervision process and in the process of thesis defense. Failure to do so is reason for disciplinary action.	
Learning outcomes: The bachelor's thesis demonstrates mastery of the basics of theory and professional terminology of the field of study, acquisition of knowledge, skills and competencies in accordance with the declared profile of the graduate of the study program, as well as the ability to apply them creatively in solving selected field problems. The bachelor thesis may have elements of compilation. The student demonstrates the ability of independent professional work in terms of content, formal and ethical. Further details on the bachelor thesis are determined by Directive no. 1/2011 on the basic requirements of final theses and the Study Regulations of UPJŠ in Košice for the 1st, 2nd and combined 1st and 2nd degree.	
Brief outline of the course: 1. Elaboration of the bachelor thesis in accordance with the instructions of the supervisor. 2. Presentation of the results of the bachelor's thesis before the examination commission. 3. Answering questions related to the topic of the bachelor thesis within the discussion.	
Recommended literature: The recommended literature is determined individually in accordance with the topic of the bachelor's thesis.	
Course language: Slovak and optionally English.	
Notes:	

Course assessment					
Total number of assessed students: 134					
A	B	C	D	E	FX
45.52	28.36	11.94	7.46	6.72	0.0
Provides:					
Date of last modification: 28.11.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ BKP2/14	Course name: Bachelor project
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 1 Per study period: 14 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisites:	
Conditions for course completion: To prepare and present a contribution related to thesis and its topic.	
Learning outcomes: To get students familiar with basic knowledge on the form and content of thesis and thesis presentation as well as with the support for its realisation.	
Brief outline of the course: Necessary elements and formal aspects of a thesis. WYSIWYG editors, LaTeX, drawing programs. Presentation software, Microsoft PowerPoint and its clones, Beamer. Suggestions for presentation and contribution making.	
Recommended literature: electronic information sources	
Course language: Slovak or English	
Notes:	
Course assessment Total number of assessed students: 141	
abs	n
100.0	0.0
Provides: doc. RNDr. Dušan Šveda, CSc.	
Date of last modification: 03.05.2015	
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ BPO/14	Course name: Bachelor thesis and its defence
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course:	
Course level: I.	
Prerequisites:	
Conditions for course completion: The bachelor thesis is the result of the student's own work. It must not show elements of academic fraud and must meet the criteria of good research practice defined in the Rector's Decision no. 21/2021, which lays down the rules for assessing plagiarism at Pavol Jozef Šafárik University in Košice and its components. Fulfillment of the criteria is verified mainly in the supervision process and in the process of thesis defense. Failure to do so is reason for disciplinary action.	
Learning outcomes: Evaluation of student's competences with respect to the profile of the graduate. The bachelor's thesis demonstrates mastery of the basics of theory and professional terminology of the field of study, acquisition of knowledge, skills and competencies in accordance with the declared profile of the graduate of the study program, as well as the ability to apply them creatively in solving selected field problems. The bachelor thesis may have elements of compilation. The student demonstrates the ability of independent professional work in terms of content, formal and ethical. Further details on the bachelor thesis are determined by Directive no. 1/2011 on the basic requirements of final theses and the Study Regulations of UPJŠ in Košice.	
Brief outline of the course: 1. Elaboration of the bachelor thesis in accordance with the instructions of the supervisor. 2. Presentation of the results of the bachelor's thesis before the examination commission. 3. Answering questions related to the topic of the bachelor thesis within the discussion.	
Recommended literature: The recommended literature is determined individually in accordance with the topic of the bachelor's thesis.	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 178					
A	B	C	D	E	FX
68.54	17.98	6.74	3.93	2.25	0.56
Provides:					
Date of last modification: 19.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚBEV/ BDD/05		Course name: Biology of Children and Adolescents			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 0 Per study period: 28 / 0 Course method: present					
Number of ECTS credits: 2					
Recommended semester/trimester of the course: 4., 6.					
Course level: I.					
Prerequisites:					
Conditions for course completion: Written test					
Learning outcomes: Acquisition of basic morphological and physiological knowledge about individual organs and systems of the human body with a focus on the specifics of childhood and adolescence. Familiarity with developmental and growth characteristics and with the most common diseases in these stages of ontogenesis.					
Brief outline of the course: Human ontogenesis. Postnatal development. Age specific features of skeletal and muscular, circulatory, respiratory, gastrointestinal and urinary systems. Reproductive system. Endocrine system. Nervous system. Age specifics of selected diseases and drug dependence arise. Human population and environment.					
Recommended literature: Drobný I., Drobná M.: Biológia dieťaťa pre špeciálnych pedagógov I. a II. Bratislava, PdF UK, 2000 Lipková V.: Somatický a fyziologický vývoj dieťaťa. Osveta Bratislava, 1980 Malá H., Klementa J.: Biológia detí a dorastu. Bratislava, SPN, 1989					
Course language:					
Notes:					
Course assessment Total number of assessed students: 1717					
A	B	C	D	E	FX
31.74	23.76	17.94	16.83	9.2	0.52
Provides: doc. RNDr. Monika Kassayová, CSc.					
Date of last modification: 20.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ ZBR/14	Course name: Bridge fundamentals
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Active participation on exercises.	
Learning outcomes: A student gets acquainted with fundamentals of the contract bridge, develops his/her logical thinking and consolidates his/her habits of positive social behaviour.	
Brief outline of the course: Bridge rules. Principles of the bidding system Standard American. Basic techniques of declarer's play. Basic techniques of the defence. Lead conventions, signals. Common bidding conventions. Selected advanced techniques of the card play. Partnership cooperation in the contract bridge. Bridge ethics.	
Recommended literature: T. Menyhért: Kurz bridžu 2013, http://new.bridgekosice.sk/kurz-bridzu-2013/ R. Pavlicek: Learn To Play Bridge!, http://www.rpbridge.net/1a00.htm ACBL SAYC System Booklet, http://ebookbrowse.net/acbl-sayc-pdf-d201415187	
Course language: Slovak or English	
Notes: Minimum number of participants is 4.	
Course assessment Total number of assessed students: 26	
abs	n
96.15	3.85

Provides: doc. RNDr. Miroslav Ploščica, CSc., prof. RNDr. Mirko Horňák, CSc.
Date of last modification: 08.02.2022
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KOP/OPaPDV/14	Course name: Civil Law and Intellectual Property Rights
Course type, scope and the method: Course type: Lecture Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 3., 5.	
Course level: I., N	
Prerequisites:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	
Course assessment Total number of assessed students: 113	
abs	n
93.81	6.19
Provides: doc. JUDr. Renáta Bačárová, PhD., LL.M., prof. JUDr. Peter Vojčík, CSc.	
Date of last modification: 23.09.2021	
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: CJP/ PFAJKKA/07		Course name: Communicative Competence in English			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: combined, present					
Number of ECTS credits: 2					
Recommended semester/trimester of the course:					
Course level: I., II., N					
Prerequisites:					
Conditions for course completion: Active participation in class and completed homework assignments. Students are allowed to miss two classes at the most. 2 credit tests (presumably in weeks 6/7 and 12/13) and an oral presentation in English. Final evaluation consists of the scores obtained for the 2 tests (50%) and the presentation (50%). Final grade will be calculated as follows: A 93-100 %, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64 % and less.					
Learning outcomes:					
Brief outline of the course:					
Recommended literature: www.bbclearningenglish.com Štěpánek, Libor a kol. Academic English-Akademická angličtina. Praha: Grada Publishing, a.s., 2011. McCarthy M., O'Dell F.: English Vocabulary in Use, Upper-Intermediate. CUP, 1994. Fictumova J., Ceccarelli J., Long T.: Angličtina, konverzace pro pokročilé. Barrister and Principal, 2008. Peters S., Gráf T.: Time to practise. Polyglot, 2007. Jones L.: Communicative Grammar Practice. CUP, 1985.					
Course language: English language, B2 level according to CEFR					
Notes:					
Course assessment Total number of assessed students: 289					
A	B	C	D	E	FX
44.64	20.76	17.65	7.96	6.23	2.77
Provides: Mgr. Barbara Mitříková, Mgr. Viktória Mária Slovenská					
Date of last modification: 12.02.2023					

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: CJP/ PFAJGA/07	Course name: Communicative Grammar in English
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: combined, present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II., N	
Prerequisites:	
Conditions for course completion: Active classroom participation (maximum 2 absences tolerated), homework assignments completed by given deadlines. Powerpoint presentation of a topic related to the study field. Final Test - end of semester, no retake Final assessment = average of test and presentation. Grading scale: A 93-100%, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64% and less	
Learning outcomes: The development of students' language skills - reading, writing, listening, speaking, improvement of their communicative linguistic competence. Students acquire knowledge of selected phonological, lexical and syntactic aspects, development of pragmatic competence. Students can effectively use the language for a given purpose, with focus on Academic English and English on level B2.	
Brief outline of the course: Selected aspects of English grammar and pronunciation Word formation Contrast of tenses in English The passive voice Types of Conditionals Phrasal verbs and English idioms Words order and collocations, prepositional phrases	
Recommended literature: Vince M.: Macmillan Grammar in Context, Macmillan, 2008 McCarthy, O'Dell: English Vocabulary in Use, CUP, 1994 www.linguahouse.com esllibrary.com bbclearningenglish.com ted.com/talks	
Course language:	

English language, level B2 according to CEFR.					
Notes:					
Course assessment					
Total number of assessed students: 432					
A	B	C	D	E	FX
39.81	19.91	16.2	8.1	5.79	10.19
Provides: Mgr. Lenka Klimčáková					
Date of last modification: 13.09.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KGER/ NJKG/07	Course name: Communicative Grammar in German Language
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.	
Prerequisites:	
Conditions for course completion: Active participation in class and completed homework assignments. Students are allowed to miss 2 classes at the most (2x90 min.). 2 control tests during the semester. Final grade will be calculated as follows: A 93-100 %, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64 % and less.	
Learning outcomes: The aim of the course is to identify and eliminate the most frequent grammatical errors in oral and written communication, learning language skills of listening comprehension, speaking, reading and writing, increasing students' language competence (acquisition of selected phonological, lexical and syntactic knowledge), development of students' pragmatic competence (acquisition of the ability to express selected language functions), development of presentation skills, etc.	
Brief outline of the course: The course is aimed at practicing and consolidating knowledge of morphology and syntax of German in order to show the context in grammar as a whole. The course is intended for students who often make grammatical errors in oral as well as written communication. Through the analysis of texts, audio recordings, tests, grammar exercises, monologic and dialogical expressions of students focused on specific grammatical structures, problematic cases are solved individually and in groups. Emphasis is placed on the balanced development of grammatical thinking in the communication process, which ultimately contributes to the development of all four language skills.	
Recommended literature: Dreyer, H. – Schmitt, R.: Lehr- und Übungsbuch der deutschen Grammatik. Hueber Verlag GmbH & Co. Ismaning, 2009. Krüger, M.: Motive Kursbuch, Lektion 1 – 30. Huebert Verlag GmbH & Co. Ismaning, 2020. Brill, L.M. – Techmer, M.: Deutsch. Großes Übungsbuch. Wortschatz. Huebert Verlag GmbH & Co. Ismaning, 2011. Földeak, Hans: Sag's besser!. Grammatik. Arbeitsbuch für Fortgeschrittene. Huebert Verlag GmbH & Co. Ismaning, 2001. Geiger, S. – Dinsel, S.: Deutsch Übungsbuch Grammatik A2-B2. Huebert Verlag GmbH & Co. Ismaning, 2018. Dittelová, E. – Zavatčanová, M.: Einführung in das Studium der deutschen Fachsprache. Košice: ES UPJŠ, 2000.	

Course language: German, Slovak language					
Notes:					
Course assessment Total number of assessed students: 56					
A	B	C	D	E	FX
60.71	10.71	8.93	3.57	8.93	7.14
Provides: Mgr. Ulrika Strömplová, PhD.					
Date of last modification: 12.07.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚINF/INSa/21		Course name: Competitions in Informatics 1			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 4 Per study period: 56 Course method: present					
Number of ECTS credits: 4					
Recommended semester/trimester of the course: 1.					
Course level: I.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 9					
A	B	C	D	E	FX
66.67	22.22	11.11	0.0	0.0	0.0
Provides: RNDr. Dominika Pališínová					
Date of last modification: 23.02.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚINF/ INSb/21		Course name: Competitions in Informatics 2			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 4 Per study period: 56 Course method: present					
Number of ECTS credits: 4					
Recommended semester/trimester of the course: 2.					
Course level: I.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 23					
A	B	C	D	E	FX
43.48	13.04	34.78	0.0	0.0	8.7
Provides: RNDr. Rastislav Krivoš-Belluš, PhD.					
Date of last modification: 23.02.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ TVY/15	Course name: Computability theory
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 5.	
Course level: I., II.	
Prerequisites:	
Conditions for course completion: Two written examinations focused on the construction of Turing machines, creating sequences of (primitive) recursive functions, solving examples. Oral exam focused on the relationship between classes of recursive and computable functions, the problem of stopping a Turing machine.	
Learning outcomes: Knowledge of computational model of Turing machine, Goedelian arithmetization, and relationship between Turing computability and recursivity of functions.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Turing machine, basic principles of work of Turing machine, formalization of basic notions 2. Shifting of states, compositions of machines, computations on composed machines 3. Modifications of configuration 4. Elementary Turing machines 5. Compositions of elementary Turing machines 6. Primitively recursive functions 7. Primitively recursive predicates 8. Functions and predicates from number theory 9. Goedelian arithmetization of Turing computability 10. Recursive functions 11. Relationship of recursivity and Turing computability 12. Halting problem 	
Recommended literature: <ol style="list-style-type: none"> 1. BRIDGES, Douglas. Computability, A Mathematical Sketch book. Springer--Verlag, 1994. ISBN:: 978-0387941745 2. BUKOVSKÝ, Lev. Teória algoritmov, ES UPJŠ, Košice, 1999. ISBN 8070973730 3. MACHTEY, Michael a Paul YOUNG. An Introduction to the General Theory of Algorithms, North--Holland, Amsterdam 1978. 4. KRAJČI, Stanislav. Teória vypočítateľnosti. http://ics.upjs.sk/~krajci/skola/vyucba/ucebneTexty/vypocitatelnost.pdf 	
Course language:	

Slovak					
Notes:					
Course assessment					
Total number of assessed students: 299					
A	B	C	D	E	FX
49.16	11.71	12.04	5.35	5.69	16.05
Provides: prof. RNDr. Stanislav Krajčí, PhD., doc. RNDr. Ľubomír Antoni, PhD.					
Date of last modification: 04.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ UNV1/15	Course name: Computational and cognitive neuroscience I
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 3.	
Course level: I., N	
Prerequisites:	
Conditions for course completion: Midterm exam Final exam consisting of written and/or oral part	
Learning outcomes: Overview anatomy, physiology, and cognitive processes in the human brain with focus on computational aspects of cognition and computational tools used in neuroscience.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Intro to neural and cognitive science 2. Overview of anatomy and physiology of the central nervous system (CNS) 3. Methods of study in neuroscience. Sensory, motor and associative brain areas. 4. Neuron: anatomy, types, action potential 5. Propagation of signals in the neuron, neural coding. 6. Synaptic transmission and plasticity - neural basis of learning and memory. 7. Psychology of memory and learning. 8. Vision: Intro. Perception of brightness, edges, color. Model BCS/FCS. Perception of size and sitance. 9. Hearing and auditory cognition. 10. Language, psycholinguistics, speech perception and production. 11. Attention. 12. Crossmodal interaction (vision, hearing, touch). 13. Reasoning and decision making. 	
Recommended literature: <ol style="list-style-type: none"> 1. Poeppel D., Mangun G., Gazzaniga M. (ed.): The Cognitive Neurosciences. 6th ed. MIT Press. 2020. ISBN-13: 978-0262043250 2. Dayan P and LF Abbott: Theoretical Neuroscience - Computational and Mathematical Modeling of Neural Systems. MIT Press, 2005 ISBN-13: 978-0262541855 3. Thagard P: Mind: Introduction to Cognitive Science, 2nd Edition. Bradford Books. ISBN-13†: †978-0262701099 	
Course language:	

Slovak or English					
Notes: Content prerequisites: Algebra, programming (Matlab).					
Course assessment Total number of assessed students: 32					
A	B	C	D	E	FX
18.75	21.88	25.0	21.88	9.38	3.13
Provides: doc. Ing. Norbert Kopčo, PhD., RNDr. Keerthi Kumar Doreswamy, Ing. Udbhav Singhal, Mgr. Ondrej Spišák					
Date of last modification: 08.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ PSIN/15	Course name: Computer network Internet
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 3 / 1 Per study period: 42 / 14 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 4.	
Course level: I., N	
Prerequisites: ÚINF/PAZ1a/15 or ÚINF/PRG1/15	
Conditions for course completion: Activity at exercises (max 18 points), home work (max 18 points), test (max 30 points). Verbal exam (min 25 points, max 50 points). Required minimum for passing the course is 55 points.	
Learning outcomes: Students will get the informations about principles and achitecture of Internet. They will understand the principles of ISO/OSI layers reference model for network communication. They will understand the meaning and usage of terms protocol, service, interface. They will analyze the parameters of communication channels, understand the function of interconnection devices (hub, switch, router). They will understand the structure of IP packets, addressing and how packets are transmitted, the principle of routing protocols and the creation of routing tables. They will understand the priciples of acknowledged TCP transport transmission and its implementation. They will know how to use the interface of UDP and TCP protocols in a program code. They will understand the basic application protocols of the Internet.	
Brief outline of the course: 1. Introduction to computer networks, internet connection types, delay and loss in packet-switched networks, ISO OSI reference model and TCP/IP protocols family. 2. Application layer: Web and HTTP, protocol FTP ,e-mail and protocols SMTP, POP3, IMAP, 3. Application layer: domain names and DNS, Peer-to-peer applications. Security in computer networks. 4. Transport layer: services, multiplexing and demultiplexing, protocol UDP, reliable data transfer 5. Transport layer: connection oriented transport protocol TCP, flow and congestion control. 6. Network Layer: Internet protocol IPv4, virtual circuit and datagram networks, packet fragmentation, routing table, application protocol DHCP 7. Network Layer: network address translation NAT, ICMP protocol, internet protocol IPv6 8. Network Layer: routing algorithms and protocols, broadcast and multicast routing 9. Link layer: error detection, multiple access methods CSMA/CD and CSMA/CA, Ethernet, frames, protocols ARP and RARP, link layer addressing 10. Link Layer and wireless and mobile networks: hub, switch, virtual LAN, 802.11 Wireless LAN, Bluetooth 802.15, WiMAX 802.16, Mobile IP, mobility in GSM 11. Physical Layer: Communication channels parameters, digital and analog encoding.	

Recommended literature: 1. J. F. Kurose, Keith W. Ross: Computer Networking: A Top-Down Approach, 7. edition, 2016 2. A. S. Tanenbaum: Computer Networks, 5. edition, Pearson, 2010 3. W. Stallings: Local and Metropolitan Area Networks, Prentice Hall, 2000 4. E. Comer, R.E. Droms: Computer Networks and Internets, Prentice Hall, 2003 5. W. R. Stevens: TCP/IP Illustrated, Vol.1: The Protocols, Addison-Wesley, 1994					
Course language: Slovak or English					
Notes: Content prerequisites: basic programming skills in Java					
Course assessment Total number of assessed students: 843					
A	B	C	D	E	FX
9.49	5.58	12.46	16.37	36.42	19.69
Provides: RNDr. Peter Gurský, PhD., doc. RNDr. JUDr. Pavol Sokol, PhD.					
Date of last modification: 04.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ KRS/15	Course name: Cryptographic systems and their applications
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: I., II., N	
Prerequisites:	
Conditions for course completion: Homeworks, midterm written exam, active participation in laboratory exercises. Final written exam, possibly oral exam.	
Learning outcomes: This course covers the basic knowledge in understanding and using cryptography. The main focus is on definitions, theoretical foundations, and rigorous proofs of security, with some programming practice. Topics include symmetric and public key encryption, message integrity, hash functions, block cipher design and analysis, number theory, and digital signatures. The course also provides an introduction to cryptographic protocols for authentication and key management, including PKI and certificates.	
Brief outline of the course: Classical cryptography, basic information theory, cryptanalysis, security of classical ciphers. Symmetric ciphers - stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric ciphers - RSA, Elgamal, elliptic curve cryptosystems. Hash functions, message authentication codes, digital signatures. Authentication, key establishment and distribution, certificates.	
Recommended literature: 1. PAAR, Ch., PELZL, J.: Understanding Cryptography, Springer 2010. 2. STINSON, D. R., PATERSON, M. B.: Cryptography: Theory and Practice. CRC Press, 2018. 3. MAO, W. Modern Cryptography: Theory and Practice. Prentice Hall, 2003. 4. MENEZES, A., OORSCHOT, P. van, VANSTONE, S.: Handbook of Applied Cryptography. CRC Press, 1996. 5. SCHNEIER, B.: Applied Cryptography, 20th Edition, John Wiley & Sons Inc., 2015	
Course language: Slovak or English	
Notes: Content prerequisites: basic number theory and algebra, basic programming	

Course assessment					
Total number of assessed students: 119					
A	B	C	D	E	FX
14.29	9.24	14.29	13.45	31.93	16.81
Provides: doc. RNDr. Jozef Jirásek, PhD., RNDr. Rastislav Krivoš-Belluš, PhD.					
Date of last modification: 08.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ DBS1a/15	Course name: Database systems
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 3.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Demonstration of adequate mastery of the content standard of the subject in the ongoing and final evaluation, the ability to formulate a problem in the acquired terminology and solve it within a project. Written works during the semester, project. Written and oral exam.	
Learning outcomes: After completing the course, the student acquires the principles of relational databases, is able to apply standard data models, design relational databases and formulate filtering queries.	
Brief outline of the course: 1) Relational databases. Query language SQL, filtering. 2) Data types, operators, numerical, string and time functions. 3) JOIN operations. 4) AGGREGATION AND GROUP BY. 5) Data and database models. Relational scheme. RDB principles. Data integrity. 6) DB design, ER diagrams. 7) System commands about DB and tables. Cascading deletion and update. 8) Nested queries. ROLLUP. CASE expression. 9) Three-valued logic. Quantifiers and NOT. Set operations. 10) Data science and knowledge acquisition using R. 11) Data warehouses. Data cube. Pivot table. 12) Normalization of relational databases - 1. Relational algebra.	
Recommended literature: C.J. Date, Database Design and Relational Theory, 2012, O'Reilly Media, Inc., ISBN: 978-1-449-32801-6 J. Murach, Murach's MySQL, 3rd Edition, 2019, Mike Murach & Associates, Inc., ISBN-10: 1943872368 - R. Ramakrishnan, J. Gehrke, Database Management Systems, 2020, McGraw-Hill, ISBN13 9780071231510 - S. Krajčí: Databázové systémy, UPJŠ, 2005	

Course language: Slovak or English					
Notes:					
Course assessment Total number of assessed students: 910					
A	B	C	D	E	FX
11.43	10.0	17.47	22.2	31.98	6.92
Provides: doc. RNDr. Csaba Török, CSc., RNDr. Dávid Varga					
Date of last modification: 08.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ DBS1b/15	Course name: Database systems
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 6	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisites: ÚINF/DBS1a/15	
Conditions for course completion: Demonstration of adequate mastery of the content standard of the subject in the ongoing and final evaluation, the ability to formulate a problem in the acquired terminology and solve it within a project. Written works during the semester, project. Written and oral exam.	
Learning outcomes: After completing the course, the student will be able to apply more sophisticated techniques of relational databases, theoretical analysis of functional dependencies of attributes and is able to work with non-relational databases.	
Brief outline of the course: 1) Introduction to SQL Server. Set operations. Window functions. 2) Stored procedures. System and user functions. 3) Views. CTE, recursion and transitive closure. 4) Transactions. Cursors. Pivoting. 5) Triggers and integrity. Physical organization of data, B-trees and indexes. 6) XML documents and their querying. JSON. 7) Functional dependencies and NF. 8) The latest normal form - ETNF. 9) Big data and NoSQL. 10) MongoDB, CRUD and cursors. 11) Aggregations and indices. 12) Replication and sharding.	
Recommended literature: - Date C.J., Database Design and Relational Theory, O'Reilly, 2012 - I. Ben-Gan, D. Sarka, A. Machanic, K. Farlee, T-SQL Querying, 2015, Microsoft Press, ISBN: 978-0-7356-8504-8 - I. Ben-Gan, T-SQL Fundamentals, Third Edition, 2016, Microsoft Press, ISBN: 978-1-5093-0200-0	

- L. Davidson, Pro SQL Server Relational Database Design and Implementation, 2021, Apress, ISBN-13: 978-1-4842-6496-6
- K. Chodorow, MongoDB: The Definitive Guide, O'Reilly, second edition, 2013

Course language:

Slovak or English

Notes:

If necessary, teaching, mid-term and final evaluation will be by distance form.

Course assessment

Total number of assessed students: 762

A	B	C	D	E	FX
9.84	8.53	12.6	24.41	34.51	10.1

Provides: doc. RNDr. Csaba Török, CSc., RNDr. Dávid Varga

Date of last modification: 08.01.2022

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ DSMa/10	Course name: Discrete mathematics I
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 3.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Examination.	
Learning outcomes: To be familiar with some factual knowledge of combinatorics and graph theory. To understand and appreciate mathematical notions, definitions, and proofs, to solve problems requiring more than just standard recipes, and to express mathematical thoughts precisely and more rigorously.	
Brief outline of the course: Basic principles. Counting and binomial coefficients, Binomial theorem, polynomial theorem. Recurrence: Some miscellaneous problems, Fibonacci-type relations, Using generating functions, miscellaneous methods. The inclusion-exclusion principle. Rook polynomials. Introduction to graphs: The concept of graphs, paths in graphs. Connectivity. Trees, bipartite graphs. Planarity. Polyhedra. Traveling round a graph: Eulerian graphs, Hamiltonian graphs. Partitions and colourings: Vertex colourings of graphs. Edge colourings of graphs	
Recommended literature: 1. I. Anderson, A first course in discrete mathematics, Springer-Verlag London, 2001. 2. J. Matoušek and J. Nešetřil, Invitation to discrete mathematics, Oxford University Press Inc. , New York 1999. 3. S. Jendroľ, P. Mihók: Diskrétna matematika I, UPJŠ Košice 1992.	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 365					
A	B	C	D	E	FX
17.26	20.27	22.47	21.37	15.34	3.29
Provides: doc. RNDr. Roman Soták, PhD., RNDr. Alfréd Onderko, RNDr. Zuzana Šárošiová					
Date of last modification: 16.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ DSMb/10	Course name: Discrete mathematics II
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisites: ÚMV/DSMa/10 or ÚMV/DSM3a/10	
Conditions for course completion: In the covered areas of graph theory, the ability to formulate definitions and statements, to present proofs of statements, to explain individual steps in proofs and to solve selected problems related to given topics is required. During the semester (continuous assessment) two tests take place, from which 50% of points can be obtained, and from the oral exam alike 50% can be obtained. Evaluation: A ... at least 90%, B ... at least 80%, C ... at least 70%, D ... at least 60%, E ... at least 50%, FX ... less than 50% .	
Learning outcomes: Acquired knowledge of basic areas of graph theory, overview of used objects and properties, understanding of important statements and methods, knowledge of possible applications and the ability to formulate and solve problems in this area.	
Brief outline of the course: - (week 1) Introduction to graphs (graph relations, graph operations, special graph classes) - (week 2-3) Connectivity and distance in graphs (connectedness of vertices, eccentricity, incidence matrix) - (week 4) (Spanning) Trees (trees isomorphism) - (week 5-6) Connectivity in graphs (vertex and edge k-connectedness) - (week 7-8) Independence and coverings (independent set, matching, vertex and edge covering) - (week 9-10) Extremal graph theory (Ramsey numbers, Turán graphs) - (week 11-13) Graph colorings (vertex coloring, chromatic polynomial, edge coloring) - (week 14) Directed graphs (strong/weak connectedness, tournaments, acyclic graphs)	
Recommended literature: 1. A. Bondy, U.S.R. Murty, Graph theory, Springer, 2008 2. G. Chartrand, L. Lesniak, P. Zhang, Graphs and digraphs, CRC Press, 2011 3. R. Diestel, Graph Theory, Springer, 2017 4. D. West, Introduction to Graph Theory, Pearson, 2001	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 209					
A	B	C	D	E	FX
14.83	12.44	24.4	24.88	18.18	5.26
Provides: RNDr. Igor Fabrici, Dr. rer. nat.					
Date of last modification: 16.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ DSMc/10	Course name: Discrete mathematics III
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course:	
Course level: I.	
Prerequisites: ÚMV/DSMb/10	
Conditions for course completion: To complete the course, it is necessary to demonstrate the ability to formulate definitions and statements from the lectured material, to understand the relationship between them, to demonstrate the proofs of statements and solve selected problems based on the presented areas of graph theory. The evaluation is given on the basis of semester assessment, activity in exercises and the result of an exam consisting of a final test and an oral part. The semester assessment takes the form of two written tests (focusing on exercises related to the lectured material) during the semester; a maximum of 25 points can be obtained for each of them. A maximum of 50 points can be obtained for the final test and a maximum of 25 points for the oral part of the exam (consisting of two theoretical questions). During the semester, each student can get a maximum of 10 bonus points for the active approach presented at the seminars on the subject. The summary evaluation is calculated by the formula $\max \{ \max \{a, b\} + c, a + b + c / 2 \} + d + e$, where a resp. b is the number of points obtained from the semester tests, c is the number of points from the final test, d is the number of points for the oral part of the exam, and e are points for activity at the seminars. To pass the exam, it is necessary to obtain a total of at least 50 points (otherwise the exam is evaluated by FX), while the rating E is given in the case of points 51-59, D in the case of 60-69, C in the case of 70-79, B in the case of 80-89 and A in the case of more than 90 points.	
Learning outcomes: After completing the course, the student is acquainted (following the prerequisite subject Discrete Mathematics I and II) with other core topics and results of graph theory, which will give the comprehensive insight and knowledge of this area of mathematics.	
Brief outline of the course: Week 1 and 2: Eulerian and hamiltonian graphs. Week 3 and 4: Measures of connectivity in graphs, Menger theorem and its corollaries. Week 5: Perfect matchings, Tutte theorem. Week 6 and 7: Planar graphs and their basic properties, Euler formula and its corollaries. Week 8: Characterization of planar graphs, theorem of Kuratowski. Week 9: Structural properties of planar and polyhedral graphs. Week 10: Chromaticity of planar graphs. Week 11: Measures of graph nonplanarity I - crossing number and its estimates, crossing lemma.	

Week 12: Measures of graph nonplanarity II - the genus of graph, Eulerova theorem for embedded graphs, chromaticity of embedded graphs. Week 13: Edge colorings, Vizing theorem					
Recommended literature: D.B. West: Introduction to graph theory (2nd edition), Prentice Hall 2001 A. Bondy and U.S.R. Murty: Graph theory, Springer-Verlag 2008 G. Chartrand, L. Lesniak, and P. Zhang, Graphs and digraphs, CRC Press 2011 R. Diestel: Graph Theory (4th edition), Springer-Verlag 2010					
Course language: Slovak or English					
Notes:					
Course assessment Total number of assessed students: 81					
A	B	C	D	E	FX
14.81	30.86	16.05	24.69	13.58	0.0
Provides: prof. RNDr. Tomáš Madaras, PhD.					
Date of last modification: 16.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/PUDB/15	Course name: Drug Addiction Prevention in University Students
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., 5.	
Course level: I.	
Prerequisites:	
Conditions for course completion: 1st of the evaluation: active participation in the training part (30p). 2nd part of the evaluation: active participation in workshops (20p). In total, students can get 50p and the final evaluation is as follows: 50 - 45: A; 44 - 40: B; 39-35: C; 34-30: D; 29 - 25: E 24 and less: FX. Detailed information in the electronic bulletin board of the course in AIS2. The teaching of the subject will be realized by a combined method.	
Learning outcomes: The student understands the principals of research data based prevention of risk behavior, can describe and explain the determinants of risk behavior as well as protective and risk factors for substance use. Student understands and adequately interprets the theory explaining the background of substance and non-substance addictions. The student is also able to state and classify the types and forms of prevention, strategies and approaches in prevention, can distinguish effective strategies from ineffective ones. The student is able to adequately interpret their experience with preventive activities in the group and assume their positive effect as well as limitations and threats.	
Brief outline of the course:	
Recommended literature: Orosová, O. a kol. (2012). Základy prevencie užívania drog a problematického používania internetu v školskej praxi. Košice: UPJŠ. Sloboda, Z., & Bukoski, J. (Eds.). (2006). Handbook of Drug Abuse Prevention: Theory, Science, and Practice. New York: Springer. National and international scientific journals.	
Course language: slovak	
Notes:	

Course assessment					
Total number of assessed students: 562					
A	B	C	D	E	FX
76.87	16.9	4.09	1.6	0.18	0.36
Provides: prof. PhDr. Ol'ga Orosová, CSc., Mgr. Lucia Barbierik, PhD., Mgr. Lenka Abrinková, PhD., Mgr. Frederika Lučanská, PhD., Mgr. Viera Čurová, Mgr. Marcela Majdanová, PhD.					
Date of last modification: 24.06.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/EDS/15	Course name: Educational software
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Conditions for ongoing evaluation: 1. Creation of a worksheet for student (with custom graphics). 2. Creation of a multimedia educational presentation (with pictures, animations and sounds). 3. Creation of an interactive educational quiz (with various types of quiz items). 4. Creation of an instructional educational video. Conditions for the final evaluation: 1. Creation and presentation of final project on the use of educational software in education. Conditions for successful completion of the course: Obtaining at least 50% of points for ongoing and final assignments.	
Learning outcomes: Students will receive, resp. deepen their basic skills in working with: a) presentation software, programs for creating and editing images, animations, diagrams, sounds, conceptual maps, b) programs for the creation of didactic tests, questionnaires, surveys, c) simulation and modeling software, d) selected subject-oriented educational programs, Students present and discuss their idea of the use of educational software and educational Internet resources and tools in the selected school subject.	
Brief outline of the course: 1. Overview of educational software and educational web resources and tools. 2. Creating and processing images into teaching aids (word clouds, QR codes, diagrams, concept maps). 3. Creating raster animations. Creating and processing sounds. 4. Creation of instructional educational video. 5. Electronic voting (Polleverywhere, Plickers, Kahoot!) and questionnaire creation (Google Forms). 6. Creation of didactic tests (Google Forms, HotPotatoes). 7. Collaborative web applications (mind42, miro, whiteboard, padlet). 8. Online communication tools (BBB).	

9. Complex online learning environments (Moodle).
10. Online educational projects and competitions (eTweening, WebQuest, PALMA junior).
11. Simulations and modelling (WolframAlpha, PhET, Geogebra). Subject-focused educational programmes.
12. Creation of educational software in Scratch environment.

Recommended literature:

SOLOMON, Gwen and Lynne SCHRUM, 2014. Web 2.0 How-to for Educators. Second. International Society for Technology in Education, 314 p. ISBN 978-1564843517.

STOBAUGH, Rebecca, 2019. Fifty Strategies to Boost Cognitive Engagement: Creating a Thinking Culture in the Classroom (50 Teaching Strategies to Support Cognitive Development). Solution Tree Press, 176 p. ISBN 978-1947604773.

LEMOV, Doug, 2015. Teach Like a Champion 2.0: 62 Techniques That Put Students on the Path to College [online]. 2nd edition. John Wiley & Sons, Incorporated, 509 p. [cited 2021-7-10]. ISBN 9781118898628. Available from: <https://ebookcentral.proquest.com/lib/upjs-ebooks/detail.action?docID=1895720>

European Schoolnet: Transforming education in Europe [online]. [cited 2021-7-10]. Available from: <http://www.eun.org/home>

Science On Stage Europe [online]. Science on Stage Europe e.V. [cited 2021-7-10]. Available from: <https://www.science-on-stage.eu/>

Course language:

Slovak and partly English due to selected programs and information sources

Notes:

By default, teaching is carried out face to face. If this is not possible (eg due to a pandemic), teaching is provided at a distance through video conferencing programs and LMS.

Course assessment

Total number of assessed students: 77

A	B	C	D	E	FX
68.83	15.58	9.09	0.0	6.49	0.0

Provides: doc. RNDr. Ľubomír Šnajder, PhD.

Date of last modification: 01.08.2021

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: CJP/ PFAJ4/07	Course name: English Language of Natural Science
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Active participation in class and completed homework assignments. Students are allowed to miss 2 classes at the most Continuous assessment: 1 credit test taken presumably in weeks 6/7 1 project (quiz on the topic of the student's field of study) 25% of the continuous assessment 5 LMS quizzes (25% of the continuous assessment) In order to be admitted to the final exam, a student has to score at least 65 % from the continuous assessment The exam test results represent 50% of the final grade for the course, continuous assessment results represent the other 50% of the final grade. The final grade for the course will be calculated as follows: A 93-100, B 86-92, C 79-85, D 72-78, E 65-71, FX 64 and less.	
Learning outcomes: Enhancement of students' language skills (speaking, writing, reading and listening comprehension) in English for specific and academic purposes and development of students' linguistic competence. Students obtain knowledge of selected phonological, lexical and syntactic aspects of professional English, improve their pragmatic competence - students can effectively use the language for a given purpose, and acquire presentation skills at B2 level (CEFR) with focus on terminology of natural sciences.	
Brief outline of the course: 1. Introduction to studying language 2. Selected aspects of scientific language 3. Talking about academic study 4. Discussing science 5. Defining scientific terminology and concepts 6. Expressing cause and effect 7. Describing structures 8. Explaining processes 9. Comparing objects, structures and concepts	

10. Talking about problem and solution 11. Referencing authors 12. Giving examples 13. Visual aids and numbers 14. Referencing time and place Presentation topics related to students' study fields.					
Recommended literature: lms.upjs.sk - e-kurz Odborný anglický jazyk pre prírodné vedy. Redman, S.: English Vocabulary in Use, Pre-intermediate, Intermediate. Cambridge University Press, 2003. Armer, T.: Cambridge English for Scientists. CUP, 2011. Wharton J.: Academic Encounters. The Natural World. CUP, 2009. P. Fitzgerald : English for ICT studies. Garnet Publishing, 2011. https://worldservice/learningenglish , https://spectator.sme.sk www.isllibrary.com linguahouse.com					
Course language: English, level B2 (CEFR)					
Notes:					
Course assessment Total number of assessed students: 3056					
A	B	C	D	E	FX
38.29	26.18	16.46	9.55	7.46	2.06
Provides: Mgr. Lenka Klimčáková, Mgr. Viktória Mária Slovenská					
Date of last modification: 05.02.2023					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚINF/BSSMI/15		Course name: Essentials of Informatics			
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present					
Number of ECTS credits: 1					
Recommended semester/trimester of the course:					
Course level: I.					
Prerequisites: ÚINF/PSIN/15 and ÚINF/PAZ1b/15 and ÚINF/OSY1/21 and ÚINF/AFJ1a/15 and ÚINF/SLO1a/15					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 11					
A	B	C	D	E	FX
9.09	27.27	9.09	18.18	36.36	0.0
Provides:					
Date of last modification: 16.06.2017					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ FRPa/19	Course name: Function of real variable
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 4 Per study period: 28 / 56 Course method: present	
Number of ECTS credits: 7	
Recommended semester/trimester of the course: 1.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Continuous assessment of student's work during the semester (submission of compulsory homework, writing three tests). Final test and oral discussion on the topics of the subject.	
Learning outcomes: The course provides an introductory knowledge on basic tools of differential and integral calculus of real functions of one real variable, and a development of certain calculation skills in the field.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Basics of mathematical logic and notations (1 week) 2. Real functions - basic notions, operation, graphs and their transformations (2 weeks) 3. Continuity of a real-valued function (1 week) 4. Derivative of a function using the geometric concepts, rules of differentiation (2 weeks) 5. Basic of differential calculus - relations with monotonicity and convexity, extremas, using in optimisation, geometric and physics tasks (2 weeks) 6. Primitive function, methods of their finding (3 weeks) 7. Newton definite integral - methods of its computation, using in geometric and physics tasks (2 weeks) 	
Recommended literature: <ol style="list-style-type: none"> 1. Kulcsár, Š. - Kulcsárová, O.: Zbierka úloh z matematickej analýzy I., UPJŠ, 2002. 2. Kulcsár, Š. - Kulcsárová, O.: Zbierka úloh z matematickej analýzy II., UPJŠ, 2003. 3. Hutník, O. - Kulcsár, Š. - Kulcsárová, O. - Mojsej, I.: Zbierka úloh z matematickej analýzy III., UPJŠ, 2011. 4. Demidovič, B. P.: Sbírka úloh a cvičení z matematické analýzy, Fragment, Praha, 2003. 5. Brannan, D.: A First Course in Mathematical Analysis, Cambridge University Press, Cambridge 2006. 6. Bruckner, A. M., Bruckner J. B., Thomson, B. S.: Real Analysis, Second Edition, ClassicalRealAnalysis.com, 2008. 7. Zorich, V. A.: Mathematical Analysis I, Springer-Verlag 2002. 	
Course language: Slovak	

Notes:					
Course assessment					
Total number of assessed students: 757					
A	B	C	D	E	FX
8.98	8.45	17.17	21.53	32.76	11.1
Provides: doc. RNDr. Ondrej Hutník, PhD., RNDr. Lenka Halčinová, PhD., RNDr. Jana Borzová, PhD.					
Date of last modification: 16.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ GEO2a/15	Course name: Geometry I
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: 5	
Recommended semester/trimester of the course: 6.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Two written tests. Written and oral examinations For continuous evaluation - max. 40 points for the written test - max. 20 points for oral exams - max. 40 points) Final score: A: 100-91 points, B: 90-81, C: 80-71, D: 70-61, E: 60-51, F: less than 51 points Note: In each of the student needs to have at least 50% max. number of points	
Learning outcomes: Mastering the basics of the theory of linear and quadratic formations in the Affine and Euclidean space, mastering the methods of solving problems in analytical geometry in relation to the secondary school curriculum.	
Brief outline of the course: 1. Affine n-dimensional space - definition. 2. Linear coordinate system. 3. Subspaces, the parametric and non-parametric representation. 4. The relative position of the two subspaces. 5. Bundles of lines. 6. The arrangement of points on the line. 7. Convex sets. Changing the system of linear coordinates. 8. Euclidean space - definition of (scalar and outer product). 9. Euclidean distances and deviations subspaces. 10. The rate of the size of convex sets. Triangle and trigonometric theorems. 11.-12. Conic and line.	
Recommended literature: 1. M.Sekanina, L.Boček, M.Kočandrle, J.Šedivý: Geometrie 1, SPN Praha 1986 2. M.Hejný, V.Zaťko, P.Kršňák: Geometria 1, SPN Bratislava 1985 3. J.Eliaš, J.Horváth, J.Kajan: Zbierka úloh z vyššej matematiky 1, Alfa Bratislava 4. M.Trenkler: Materiály uvedené na Internet.	

Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 167					
A	B	C	D	E	FX
19.16	17.37	22.75	17.96	13.77	8.98
Provides: doc. RNDr. Dušan Šveda, CSc., RNDr. Monika Krišáková					
Date of last modification: 19.09.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KF/DF2p/03	Course name: History of Philosophy 2 (General Introduction)
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 6.	
Course level: I., II.	
Prerequisites:	
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 spektaklu. 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 zařikávání. 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: Nakladateľstvo 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 of assessed students: 746

A	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: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KPE/ INP/17		Course name: Inclusive Pedagogy			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of ECTS credits: 2					
Recommended semester/trimester of the course: 5.					
Course level: I.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 85					
A	B	C	D	E	FX
65.88	25.88	4.71	1.18	2.35	0.0
Provides: PaedDr. Michal Novocký, PhD.					
Date of last modification: 20.06.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ IKTP/15	Course name: Information and Communication Technologies
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., 5.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Problems solved during the semester. A final project using presentation programs, spreadsheet programs, text processors, internet resources and search tools. The ECDL certificate (all 7 modulus) is accepted as the exam with the ranking "A-výborne".	
Learning outcomes: To achieve and extend fundamental information and communication knowledge to the level which is acceptable in the EU region.	
Brief outline of the course: 1.Information sheet of the subject. ÚINF / IKTP, content of the exercise, teaching resources, evaluation of the subject, examples of projects, e-mail (message structure, attachments, addresses, signature, filters), 2.WWW (advanced information search, bookmarks - naming, organizing, exporting, importing, feeds - iGoogle) 3.Word (font, search and replace, inserting links, symbols and images, tabs, line breaks, paragraphs, pages, multi-column rate, tables) 4.Word (paragraph styles, sections, header and footer, content and index creation) 5.Word (revision, mass correspondence, creation of forms, printing the document to the printer and to PDF) 6.Word (overview of typographic rules, project creation1 - design of structure and content) 7. Excel (workbook, sheet, table, cells (cell format), formulas (aggregation functions), data filtering, graphs) 8.PowerPoint (inserting slides with different layouts, tables, graphs, multimedia objects, changing designs, creating a presentation by importing a text file), submission of PROJEKT1 (text in the style of the final thesis) by e-mail to lubomirsnajder@gmail.com (Subject: IKTP - projekt1) 9.PowerPoint (slide master, slide numbering, presentation navigation - links, buttons, image compression, line color change) 10.PowerPoint (custom animations, presentation timing, annotations, printing the presentation and its outline, running the presentation) 11 PowerPoint (project creation2 - structure and content design)	

12. Presentation PROJEKT2 (PowerPoint presentation)					
13. Presentation PROJEKT2 (PowerPoint presentation)					
Recommended literature: 1. Franců, M: Jak zvládnout testy ECDL. Praha : Computer Press, 2007. 160 s. ISBN 978-80-251-1485-8. 2. Jančařík, A. et al.: S počítačem do Evropy – ECDL. 2. vydanie. Praha : Computer Press, 2007. 152 s. ISBN 80-251-1844-3. 3. Kolektív autorov: Sylabus ECDL verzia 5.0. [on-line] [citované 9.2.2010]. Dostupné na internete: < http://www.ecdl.sk/buxus/docs//interne_informacie/Sylabus_V5.0/20090630ECDL-SylabusV50_SK-V01_FIN.pdf >.					
Course language: Slovak or English					
Notes:					
Course assessment Total number of assessed students: 1030					
A	B	C	D	E	FX
65.44	17.86	6.89	3.59	1.65	4.56
Provides: Mgr. Alexander Szabari, PhD.					
Date of last modification: 23.11.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: Dek. PF UPJŠ/USPV/13	Course name: Introduction to Study of Sciences
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: Per study period: 12s / 3d Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 1.	
Course level: I.	
Prerequisites:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	
Course assessment Total number of assessed students: 2012	
abs	n
88.37	11.63
Provides: doc. RNDr. Marián Kireš, PhD.	
Date of last modification: 30.08.2022	
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚINF/ UGR1/15		Course name: Introduction to computer graphics			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present					
Number of ECTS credits: 5					
Recommended semester/trimester of the course: 3.					
Course level: I., II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes: To provide the students with knowledge of graphics algorithms and basic principles of computer graphics.					
Brief outline of the course: Graphics hardware, input and output devices. Color models, palettes. Raster graphics algorithms for drawing 2D primitives. Filling and clipping. Curve modeling, interpolations and approximations, spline forms, Bézier curves, B-splines, surfaces. Homogenous coordinates, affine transformations, perspective and parallel projections. Visible-surface determination, illumination and shading. Rendering techniques, photorealism, textures, ray tracing, radiosity. Object representations, computer animation, virtual reality.					
Recommended literature: FOLEY, J. D., van DAM, A., FEINER, S., HUGHES, J.: Computer Graphics: Principles and Practice, Addison-Wesley, 1991 MORTENSON, M.E.: Geometric modeling, 2.ed., Willey, 1997					
Course language:					
Notes:					
Course assessment Total number of assessed students: 311					
A	B	C	D	E	FX
13.18	10.29	13.83	23.47	30.87	8.36
Provides: RNDr. Rastislav Krivoš-Belluš, PhD.					
Date of last modification: 08.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ UAD/10	Course name: Introduction to data analysis
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 1 / 1 Per study period: 14 / 14 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 3.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Test (40p) and individual project work (20p). Oral presentation of the individual project work (5p). At least 50% must be obtained from each part. Final evaluation: $\geq 90\%$ A; $\geq 80\%$ B; $\geq 70\%$ C; $\geq 60\%$ D; $\geq 50\%$ E; $< 50\%$ FX.	
Learning outcomes: To know the basic purpose of statistical data analysis, its methods and statistical thinking and understand its importance for science and practical life. To understand elementary statistical concepts. To gain experience in handling real data using spreadsheet Excel and statistical software R.	
Brief outline of the course: 1. Introduction (the basic philosophy and aim of statistical data analysis, descriptive and inductive statistics) 2. Collecting Data (types of data, random sample, randomized experiment) 3. Handling Data (visualization, summarizing – measures of center, measures of variability, skewness and kurtosis, empirical rule) - 5 weeks 4. Relationships in data (introduction to regression and correlation) - 4 weeks 5. Statistical inference (elementary view into estimation and testing hypothesis) - 2 weeks	
Recommended literature: 1. Anděl, J.: Statistické metody, Matfyzpress, Praha, 1998 (in Czech) 2. Rossman, A.J. et al.: Workshop Statistics: Discovery with Data and Fathom, 3rd ed. Wiley, 2009 3. Utts, J.M.: Seeing Through Statistics, 4th ed., Thomson Brooks/Cole, Belmont, 2014 4. Utts, J.M., Heckard R.F.: Mind on Statistics, 6th ed. Thomson Brooks/Cole, Belmont, 2021 5. Zvára, K., Štěpán, J.: Pravděpodobnost a matematická statistika, Matfyzpress, Praha, 2001 (in Czech)	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 390					
A	B	C	D	E	FX
37.44	25.13	26.41	10.0	0.51	0.51
Provides: doc. RNDr. Martina Hančová, PhD.					
Date of last modification: 13.09.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ UIB1/21	Course name: Introduction to information security
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 3.	
Course level: I.	
Prerequisites:	
Conditions for course completion: The condition for passing the course is: 1. Exercise tasks (20% of the total number of points), 2. Homeworks (30% of the total number of points), 3. Written final theoretical exam (25% of the total number of points), 4. Written final practical exam (25% of the total number of points).	
Learning outcomes: The result of the education is an understanding of the basic concepts of information security from the technical, legal and procedural views of point.	
Brief outline of the course: 1. Introduction to information security and information security model, 2. Information security management, 3. Risk and risk management, 4. Legal, normative and ethical aspects of information security, 5. Continuity management of activities, processes and security incidents handling, 6. Introduction to cryptology, 7. Access control, 8. Physical and environmental security, 9. Human resources security and social engineering, 10. End point security and malicious code, 11. Computer network security, 12. Application security, 13. Final exam.	
Recommended literature: 1. MARTIN, Andrew, Awais RASHID, Steve SCHNEIDER a Howard CHIVERS. CyBOK: The Cyber Security Body of Knowledge. The National Cyber Security Centre, 2021, 2. ANDRESS, Jason, Awais RASHID, Steve SCHNEIDER a Howard CHIVERS. Foundations of Information Security: A Straightforward Introduction. 1. No Starch Press, 2019. ISBN 978-1718500044, 3. PELTIER, Thomas, Awais RASHID, Steve SCHNEIDER a Howard CHIVERS. Information Security Fundamentals. 2. Boca Raton: Auerbach Publications, 2013. ISBN 978-1138436893.	
Course language: Slovak or English	
Notes:	

Course assessment					
Total number of assessed students: 130					
A	B	C	D	E	FX
36.92	28.46	20.0	7.69	3.08	3.85
Provides: doc. RNDr. JUDr. Pavol Sokol, PhD., MSc. Terézia Mézešová					
Date of last modification: 04.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ UDM/10	Course name: Introduction to mathematics
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 1 / 2 Per study period: 14 / 28 Course method: present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 1.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Two tests during the semester.	
Learning outcomes: Repetition of problematic sections of the secondary mathematics by interesting tasks. Explanation of basic terms, properties and proof methods used in various areas of mathematics.	
Brief outline of the course: Simplification of algebraic expressions. Real number, absolute value of real numbers; equations and inequalities. Irrational equations and inequalities. Concept of function. Linear and quadratic function; equations and inequalities. Exponential and logarithmic function; equations and inequalities. Goniometric functions; equations and inequalities. Complex numbers.	
Recommended literature: 1. V. Medek - L. Mišík - T. Šalát: REPETITÓRIUM STREDOŠKOLSKEJ MATEMATIKY, Alfa Bratislava, 1976 2. S. Richtárová - D. Kyselová: MATEMATIKA (pomôcka pre maturantov a uchádzačov o štúdium na vysokých školách), Enigma Nitra, 1998 3. O. Hudec – Z. Kimáková – E. Švidroňová: PRÍKLADY Z MATEMATIKY (pre uchádzačov o štúdium na TU v Košiciach), EF TU Košice, 1999 4. F. Peller – V. Šáner – J. Eliáš – Ľ. Pinda: MATEMATIKA – Podklady na prijímacie testy pre uchádzačov o štúdium, Ekonóm Bratislava, 2000/2001 5. F. Vesajda – F. Talafous: ZBIERKA ÚLOH Z MATEMATIKY pre stredné všeobecnovzdelávacie školy a gymnáziá, SPN Bratislava, 1973 6. J. Lukášová – O. Odvárko – B. Riečan – J. Šedivý – J. Vyšín: ÚLOHY Z MATEMATIKY pre 4. ročník gymnázia, SPN Bratislava, 1976	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 508					
A	B	C	D	E	FX
23.62	20.67	17.52	15.94	10.83	11.42
Provides: RNDr. Veronika Hubeňáková, PhD., RNDr. Lucia Janíčková, PhD., RNDr. Monika Krišáková					
Date of last modification: 24.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ UNS1/15	Course name: Introduction to neural networks
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 3.	
Course level: I., II., N	
Prerequisites:	
Conditions for course completion: The condition for passing the course is the realization of a project with the application of neural networks, successful completion of two written tests in the field of neural networks, their basic types, and genetic algorithms, as well as successful completion of the written and oral part of the exam.	
Learning outcomes: The result of the education is an understanding of the basic principles of neural networks and genetic algorithms. The student will gain the ability to apply the acquired knowledge in intelligent data analysis and also work with a selected tool for modeling neural networks.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Basic concept arising from biology. Linear threshold units, polynomial threshold units, functions calculable by threshold units. 2. Perceptrons. Linear separable objects, adaptation process (learning), convergence of perceptron learning rule, higher order perceptrons. 3. Forward neural networks, hidden neurons, adaptation process (learning), backpropagation method. 4. Recurrent neural networks. Hopfield neural networks, properties, associative memory model, energy function, learning, optimization problems (business traveler problem). 5. Model of gradually created network. ART network, architecture, operations, initialization phase, recognition phase, search and adaptation phase. Use of the ART network. 6. Applications of studied models in solving practical problems. 7. Written test I. 8. Motivation to model genetic elements. Genetic algorithm. Application of genetic algorithms. 9. Genetic programming, root trees, Read's linear code. Basic stochastic optimization algorithms: blind algorithm and climbing algorithm. Forbidden search method. 10. Genetic and evolutionary programming with typing, examples of use. Grammatical evolution. 11. Special techniques of evolutionary computations. Selection mechanisms in evolutionary algorithms. 12. Use of genetic algorithms in training neural networks. Artificial life. 13. Written test II. 	

Recommended literature:

1. AGGARWAL, Charu C. Neural networks and deep learning: a textbook. Cham: Springer, 2018. ISBN 978-3319944623.
2. KVASNIČKA, Vladimír. Úvod do teórie neurónových sietí. [Slovenská republika]: IRIS, 1997. ISBN 80-88778-30-1.
3. KVASNIČKA, Vladimír. Evolučné algoritmy. Bratislava: Vydavateľstvo STU, 2000. Edícia vysokoškolských učebníc. ISBN 80-227-1377-5.
4. MITCHEL, Melanie. An Introduction to Genetic Algorithms. Cambridge: MIT Press, 2002. ISBN 0-262-63185-7.
5. SINČÁK, Peter, ANDREJKOVÁ, G. Úvod do neurónových sietí, I. diel, Košice: ELFA, 1996. ISBN 808878638X

Course language:

Slovak or English

Notes:

Content prerequisites:

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

Course assessment

Total number of assessed students: 472

A	B	C	D	E	FX
17.16	17.58	22.25	17.8	21.19	4.03

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

Date of last modification: 23.11.2021

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚINF/MZI/21		Course name: Introduction to study of informatics			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present					
Number of ECTS credits: 5					
Recommended semester/trimester of the course: 1.					
Course level: I.					
Prerequisites:					
Conditions for course completion: Understanding of basic mathematical notions					
Learning outcomes: Understanding of basic mathematical notions					
Brief outline of the course: 1. Mathematical text 2. Connections and quantifiers 3. Classes and sets 4. Other operations operácie 5. Relations 6. Relational algebra 7. Orderings 8. Equivalences 9. Functions 10. Cardinalities 11. Infinities 12. Cardinal arithmetics					
Recommended literature: https://ics.upjs.sk/~krajci/skola/vyucba/jesen/predmety/MZI.html					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 296					
A	B	C	D	E	FX
48.65	21.28	8.78	2.7	1.01	17.57
Provides: prof. RNDr. Stanislav Krajčí, PhD.					

Date of last modification: 23.11.2021
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ LCO/10		Course name: Linear and integer programming			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present					
Number of ECTS credits: 5					
Recommended semester/trimester of the course:					
Course level: I.					
Prerequisites: ÚMV/ALGa/10					
Conditions for course completion: Continuous evaluation: a small test during each tutorial, two large tests, a project with real data and commercial software. Bonus points awarded for homeworks (formulation of proofs). A necessary condition for final exam is at least 50% of points from th semester. Final exam: demonstrate the understanding of the theory and ability of argumentation.					
Learning outcomes: Ability to formulate practical tasks in a form of a linear program. Proficiency in solving linear programs by several methods, also using software. Understanding of the underlying theory and ability of exact argumentation.					
Brief outline of the course: Formulation of linear and integer programs. Geometric solution. Simplex method, its correctness an finiteness. Duality and its economic interpretation. Dual and revised simplex method. Sensitivity analysis and parametric programming. Algorithms for integer programming: branch and bound, Gomory cuts. Computational complexity of LP and ILP. Solution of practical problems.					
Recommended literature: lms.upjs.sk - podklady k prednáškam a zadania úloh na cvičenia. Plesník, Dupačová, Vlach: Lineárne programovanie, Alfa, Bratislava 1990 Ch. Papadimitriou – K. Steiglitz: Combinatorial Optimization: Algorithms and Complexity, 1984 R.J. Vanderbei, Linear Programming: Foundations and Extentions, Springer 2020, electronic version: http://www.princeton.edu/~rvdb/LPbook/					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 152					
A	B	C	D	E	FX
21.71	17.11	20.39	20.39	17.11	3.29

Provides: prof. RNDr. Katarína Cechlárová, DrSc., RNDr. Adam Marton
Date of last modification: 17.04.2022
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚINF/ ZLI/21		Course name: Linux basics			
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: 1.					
Course level: I., N					
Prerequisites:					
Conditions for course completion: The condition for passing the course is: 1. Homeworks (50% of the total number of points), 2. Written final theoretical exam (25% of the total number of points), 3. Written final practical exam (25% of the total number of points).					
Learning outcomes: The result of the education is an understanding of the theoretical and practical background for studying computer science, by giving the necessary knowledge in the usage of Unix/Linux operating systems.					
Brief outline of the course: 1. Introduction to Unix/Linux systems, 2. Linux ommand line, 3. Text processing tools, 4. Managing files, 5. Managing users, groups and rights, 6. Managing processes, 7. Managing software and packages, 8. Administering the system - system booting, jobs, logging,9. Basic networking, 10. Managing network interfaces, 11. Managing disk partitions, 12. Exam.					
Recommended literature: 1. LPIC-1 Exam 101. LPI [online]. Canada: The Linux Professional Institute, 2021 [cit. 2021-9-22]. Dostupné z: https://learning.lpi.org/en/learning-materials/101-500/ , 2. LPIC-1 Exam 102. LPI [online]. Canada: The Linux Professional Institute, 2021 [cit. 2021-9-22]. Dostupné z: https://learning.lpi.org/en/learning-materials/102-500/ , 3. Linux - Dokumentační projekt [online]. 4. Praha: Computer Press, 2007 [cit. 2021-9-22]. Dostupné z: https://i.iinfo.cz/files/root/k/LDP_4.pdf .					
Course language: Slovak or English					
Notes:					
Course assessment Total number of assessed students: 107					
A	B	C	D	E	FX
44.86	14.95	17.76	7.48	5.61	9.35

Provides: doc. RNDr. JUDr. Pavol Sokol, PhD., RNDr. Richard Staňa
Date of last modification: 04.01.2022
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ LTM/10		Course name: Logic and set theory			
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: 5.					
Course level: I., II.					
Prerequisites: ÚMV/MANb/19 or ÚMV/FRPb/19 or ÚMV/MAN2b/22					
Conditions for course completion: Exam					
Learning outcomes: To obtain a basic knowledge on the mathematical notion of an infinity. Analysis of the notion of a proof.					
Brief outline of the course: 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. Completeness Theorem. Methods of proofs. Language of predicate calculus, examples. Axiomatizations of predicate calculus and the notion of a proof. Methods of proofs in predicate calculus.					
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 language: Slovak					
Notes:					
Course assessment Total number of assessed students: 270					
A	B	C	D	E	FX
12.59	18.89	19.26	16.3	31.11	1.85
Provides: RNDr. Jaroslav Šupina, PhD., RNDr. Adam Marton					
Date of last modification: 19.04.2022					

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ MAE/10		Course name: Macroeconomics			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present					
Number of ECTS credits: 4					
Recommended semester/trimester of the course: 5.					
Course level: I.					
Prerequisites:					
Conditions for course completion: The final mark is given based on the results of the tests written during the semester ("small" exams every week, two written exams checking the ability of computations) and oral exam, that evaluates the verbal argument about the studied models.					
Learning outcomes: The student understands the basic economic models and is able to use them to explain the real economic phenomena.					
Brief outline of the course: Basic macroeconomic notions: Gross domestic product, inflation, unemployment.. Analysis of goods markets. Financial markets. IS-LM model in closed economy. Open economy. IS-LM model in open economy. Models of labour market. Inflation and economic growth. High depth.					
Recommended literature: 1. Olivier Blanchard, Alessia Amighini, Francesco Giavazzi, Macroeconomics, a European perspective, Pearson Education, 2010 2. N. Gregory Mankiw, Macroeconomics, 7th Edition, Harvard University, Worth Publishers 2009					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 85					
A	B	C	D	E	FX
25.88	14.12	21.18	20.0	12.94	5.88
Provides: prof. RNDr. Katarína Cechlárová, DrSc.					
Date of last modification: 17.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ MAN2c/10	Course name: Mathematical analysis III
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 3.	
Course level: I.	
Prerequisites: ÚMV/MANb/19	
Conditions for course completion: Two written test during semester and activity student to practice. Final evaluation is given by continuous assessment, written and oral part of the exam.	
Learning outcomes: The purpose of the course is to provide introductory knowledge in Riemann integral calculus of real functions of one real variable and series of real functions. To develop computational skills in the field and extend the student ability to use this theory in applications. To teach the basic knowledge of the subject matter in the syllabus and develop the ability to use this theory.	
Brief outline of the course: Definite Riemann integral - definition, elementary properties, calculation methods, applications. Improper Riemann integral. Sequences and series of real functions – pointwise and uniform convergence, properties of the limit function and the sum. Power series, Taylor series and their applications.	
Recommended literature: 1. O. Hutník: Určitý integrál, UPJŠ, Košice, 2012 (in Slovak). 2. Brannan, D.: A First Course in Mathematical Analysis, Cambridge University Press, Cambridge 2006. 3. Bruckner, A. M. - Bruckner J. B. - Thomson, B. S.: Real Analysis, Second Edition, ClassicalRealAnalysis.com, 2008. 4. Zorich, V. A.: Mathematical Analysis I, Springer-Verlag 2002.	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 213					
A	B	C	D	E	FX
12.21	15.02	13.15	18.78	33.33	7.51
Provides: doc. RNDr. Ondrej Hutník, PhD., Mgr. Zuzana Ontkovičová, PhD.					
Date of last modification: 21.11.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ MAN1d/10		Course name: Mathematical analysis IV			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 4 / 2 Per study period: 56 / 28 Course method: present					
Number of ECTS credits: 7					
Recommended semester/trimester of the course:					
Course level: I.					
Prerequisites: ÚMV/MAN1c/22 or ÚMV/MAN2c/22					
Conditions for course completion: exam					
Learning outcomes: Understanding of the basic rigorous ideas of Mathematical Analysis.					
Brief outline of the course: Metric spaces. Complete, compact and connected sets. Rings sigma-rings. Measure. Outer measure. Lebesgue measure. Measurable sets. Measurable functions. Lebesgue integral. Lebesgue integral versus Riemann integral. Calculations of Lebesgue integrals. Applications.					
Recommended literature: B. S. Thomson, J. B. Bruckner, A. M. Bruckner: Elementary Real Analysis, Prentice Hall, 2001. A. M. Bruckner, J. B. Bruckner, B. S. Thomson: Real Analysis, Prentice Hall, 1997. T. Neubrunn, B. Riečan: Miera a integrál, Veda, Bratislava, 1981. B. Riečan, T. Neubrunn: Teória miery, Veda, Bratislava, 1992. G. S. Nelson, A User-Friendly Introduction to Lebesgue Measure and Integration, American Mathematical Society, 2015					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 99					
A	B	C	D	E	FX
3.03	7.07	15.15	16.16	56.57	2.02
Provides: prof. RNDr. Jozef Doboš, CSc.					
Date of last modification: 14.09.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ MAN2d/10		Course name: Mathematical analysis IV			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present					
Number of ECTS credits: 5					
Recommended semester/trimester of the course: 4.					
Course level: I.					
Prerequisites: ÚMV/MANb/19					
Conditions for course completion: Continuous assessment is taken the form of two main tests during the semester. Final evaluation is given by continuous assessment (60%), written and oral part of the exam (40%).					
Learning outcomes: The student understands the basic concepts and their properties, which are defined in the content of the course. He has developed skills to use this theory in solving theoretical and practical problems. The student is able to do connections in solving problem tasks.					
Brief outline of the course: 1. Function of several real variables - basic notions, limits and continuity. (3 weeks) 2. Differential calculus of functions of several real variables - partial derivative, differentiability, directional derivative, local and global extrema, constrained local extrema. (5 weeks) 3. Multivariable Riemann integral - definition, calculation methods, applications. (2 weeks) 4. Metric space - Euclidean space, topological properties of points and sets in metric space, completeness (3 weeks)					
Recommended literature: 1. D. HUGHES-HALLETT et al.: Calculus, Wiley, 1998, ISBN 13 cloth 978-0470-88861-2. 2. B. S. Thomson, J. B. Bruckner, A. M. Bruckner: Elementary real analysis, Prentice Hall (Pearson), Lexington, 2008.					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 58					
A	B	C	D	E	FX
27.59	17.24	24.14	13.79	15.52	1.72
Provides: RNDr. Lenka Halčinová, PhD.					
Date of last modification: 26.09.2021					

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ MANb/19	Course name: Mathematical analysis of function of real variable
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 4 / 3 Per study period: 56 / 42 Course method: present	
Number of ECTS credits: 8	
Recommended semester/trimester of the course: 2.	
Course level: I.	
Prerequisites: ÚMV/FRPa/19	
Conditions for course completion: Two written tests during semester and activity student to practice. Final evaluation is given by continuous assessment, written and oral part of the exam.	
Learning outcomes: The purpose of the course is to strengthen the knowledge in differential and integral calculus of real functions of one real variable and to develop computational skills in the field.	
Brief outline of the course: Limit and continuity of real functions, elementary functions. Differential calculus - derivatives of the first and of higher orders, the basic theorems of differential calculus and their use to investigate properties and behavior of functions.	
Recommended literature: 1. Mihalíková, B. - Ohriska, J.: Matematická analýza I (elektronický učebný text), UPJŠ Košice, 2012. 2. Mihalíková, B. - Ohriska, J.: Matematická analýza II (skriptum), ES UPJŠ Košice, 2007. 3. Kluvánek, I. - Mišík, L. - Švec, M.: Matematika I, ALFA, Bratislava, 1971. 4. Demidovič, B. P.: Sbírka úloh a cvičení z matematické analýzy, Fragment, Praha, 2003. 5. Brannan, D.: A First Course in Mathematical Analysis, Cambridge University Press, Cambridge 2006. 6. Bruckner, A. M., Bruckner J. B., Thomson, B. S.: Real Analysis, Second Edition, ClassicalRealAnalysis.com, 2008. 7. Zorich, V. A.: Mathematical Analysis I, Springer-Verlag 2002.	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 335					
A	B	C	D	E	FX
10.45	12.54	16.42	21.79	32.24	6.57
Provides: doc. RNDr. Ondrej Hutník, PhD., RNDr. Lenka Halčinová, PhD., RNDr. Jana Borzová, PhD.					
Date of last modification: 17.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ MRUa/15	Course name: Mathematical problem solving strategies I
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Deepening of knowledge and skills from the use of standard methods in solving mathematical problems in the thematic areas: Equations and inequalities and their systems, Elementary functions, Sequences, Financial mathematics. Developing the ability to explain different problem-solving strategies. Assessment is given on the basis of the results of written examinations carried out during the semester (21 points) and active participation in exercises (3 points). Classification scale: A: 91 % - 100 %, B: 81 % - 90 %, C: 71 % - 80 %, D: 61 % - 70 %, E: 51 % - 60 %, FX: 0 % - 50 %.	
Learning outcomes: The student is able to explain the basic concepts and methods of solving mathematical problems selected from various areas of school mathematics. The student is able to apply the acquired knowledge in finding and using various strategies for solving problems. The student will get acquainted with typical and more demanding tasks in school mathematics and with specific problems and misconceptions that occur in their solution in the teaching of mathematics in primary and secondary school.	
Brief outline of the course: 1. - 5. Solving equations, inequalities and systems of equations (equations and inequalities with absolute values, equations with parameters, irrational equations and inequalities, exponential and logarithmic equations and inequalities, trigonometric equations and inequalities). 6. - 9. Concept of function, properties of elementary functions, graphs of functions. 10. - 11. Sequences, arithmetic and geometric sequences. 12. - 13. Tasks of financial mathematics.	
Recommended literature:	

Kubáček, Z., Černek, P., Žabka J. a kol.: Matematika a svet okolo nás, zbierka úloh. FMFI UK Bratislava, 2008 Kopka, J., Hrozny problémů ve školské matematice, Univerzita J. E. Purkyně, Ústí nad Labem, 1999. Lengyelfalusy, T., Kochol, M., Zábojníková, N.: Metódy riešenia matematických úloh 2. Žilinská univerzita v Žiline, 2009. Učebnice a zbierky úloh z matematiky ZŠ a SŠ.					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 210					
A	B	C	D	E	FX
30.48	22.86	22.86	11.43	11.43	0.95
Provides: doc. RNDr. Stanislav Lukáč, PhD.					
Date of last modification: 12.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/MRUB/15		Course name: Mathematical problem solving strategies II			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of ECTS credits: 2					
Recommended semester/trimester of the course: 5.					
Course level: I.					
Prerequisites:					
Conditions for course completion: The resulting trial is granted on the basis of continuous assessment (on the results of written checks) and seminar work.					
Learning outcomes: Mastering the basic types of tasks and their methods of solving problems in primary and secondary school in the field of Planimetry, Stereometry and Goniometry.					
Brief outline of the course: Basic knowledge of school mathematics, various methods for the task, the role of mathematical competitions for thematic units Planimetry (4 w.), stereometry (3), goniometry (3).					
Recommended literature: [1] Hejný, M. a kol., Teória vyučovania matematiky 2. SPN, Bratislava 1989 (in Slovak) [2] Kopka, J., Hrozny problémů ve školské matematice, Univerzita J. E. Purkyně, Ústí nad Labem 1999 (in Czech) [3] Jonson-Wilder.S., Mason.J.: Developing thinking in Geometry, Sage, 2009 [4] Učebnice a zbierky úloh z matematiky ZŠ a SŠ					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 188					
A	B	C	D	E	FX
31.91	30.32	25.0	8.51	4.26	0.0
Provides: doc. RNDr. Dušan Šveda, CSc.					
Date of last modification: 19.09.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/MRUc/15	Course name: Mathematical problem solving strategies III
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 6.	
Course level: I.	
Prerequisites: ÚMV/MRUB/15	
Conditions for course completion: Conditions for continuous evaluation: <ol style="list-style-type: none"> 1. Participation in teaching in accordance with the study rules and instructions of the teacher. 2. Activity. 3. Homework and written test. 4. Conditions for successful completion of the course: <ol style="list-style-type: none"> 1. Participation in teaching in accordance with the study regulations and according to the instructions of the teacher; 2. Credits will be awarded to a student who scores at least 50% on homework assignments and at least 50% on written test. A grade of A requires at least 90%, a grade of B requires at least 80%, a grade of C requires at least 70%, a grade of D requires at least 60%, and a grade of E requires at least 50%. 	
Learning outcomes: Students demonstrate a shift in different methods of problem-solving from combinatorics, probability and statistics. They will be aware of the connections between different methods of solution, and also the connections of these methods of solution with other topics of school mathematics. While solving problems on written tests, the students will show that they have a conceptual understanding of the concepts of school combinatorics, probability and statistics. They are ready to use several methods of solving problems from these topics, they are able to consider whether a non-standard student's solution is correct or not, and they can explain this solution.	
Brief outline of the course: The content is focuses on different methods of problem-solving in combinatorics, probability and statistics. We are dealing with developing combinatorial, probabilistic and statistical thinking through different methods of problem-solving. The content of the course is based on current research results in this area. In solving combinatorial problems, students are introduced to the components of the model of combinatorial thinking - the listing of possibilities, the counting process, and combinatorial formulas and methods, and the connections between these components.	

<p>When solving probability problems, we emphasize the different approaches to probability - statistical, classical, geometric, and subjective and their connections. In part aimed at statistics, we focus on descriptive statistics and on the connection between probability and statistics.</p>																	
<p>Recommended literature: Hecht, T., Sklenáriková, Z., Metódy riešenia matematických úloh, Bratislava, SPN, 1992. (in slovak) Krantz, S.G., Techniques of Problem Solving, AMS, 1997. Larson, L.C., Metódy riešenia matematických problémov, Bratislava, Alfa, 1990. (in slovak) Učebnice a zbierky úloh pre stredné a základné školy.</p>																	
<p>Course language: Slovak</p>																	
<p>Notes:</p>																	
<p>Course assessment Total number of assessed students: 195</p> <table> <tr> <th>A</th><th>B</th><th>C</th><th>D</th><th>E</th><th>FX</th></tr> <tr> <td>30.77</td><td>27.18</td><td>24.1</td><td>11.28</td><td>6.15</td><td>0.51</td></tr> </table>						A	B	C	D	E	FX	30.77	27.18	24.1	11.28	6.15	0.51
A	B	C	D	E	FX												
30.77	27.18	24.1	11.28	6.15	0.51												
<p>Provides: doc. RNDr. Ingrid Semanišínová, PhD.</p>																	
<p>Date of last modification: 07.02.2022</p>																	
<p>Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.</p>																	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ MST/19	Course name: Mathematical statistics
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisites:	
Conditions for course completion: Total evaluation based on two written tests during the semester (2x40p) and the result of the written (30p) and oral part of the exam (30p). At least 50% must be obtained from each part. Final evaluation: $\geq 90\%$ A; $\geq 80\%$ B; $\geq 70\%$ C; $\geq 60\%$ D; $\geq 50\%$ E; $< 50\%$ FX.	
Learning outcomes: Student should obtain the knowledge about basic statistical methods and the ability to apply theoretical knowledge in practical problems solving.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Random vectors (definition, distributions, characteristics, joint and marginal distributions). 2. Covariance, correlation and regression. 3. Random sample, sampling distributions and characteristics. 4. Some important statistics and their distributions. 5. Point estimators and their properties. 6. Maximum likelihood method. 7. Interval estimates, confidence interval construction (2 weeks). 8. Testing of statistical hypothesis (critical region, level of significance and power of test, methods for searching optimal critical regions). 9. Some important parametric tests (2 weeks). 10. Some important nonparametric tests (2 weeks). 	
Recommended literature: <ol style="list-style-type: none"> 1. Skřivánková V.: Pravdepodobnosť v príkladoch, UPJŠ, Košice, 2006 (in Slovak) 2. Skřivánková V.-Hančová M.: Štatistika v príkladoch, UPJŠ, Košice, 2005 (in Slovak) 3. Casella, G., Berger, R., Statistical Inference, 2nd ed., Duxbury Press, 2002 4. DeGroot, M. H., Schervish, M. J.: Probability and Statistics, 4th ed., Pearson, Boston, 2012 5. Anděl J.: Základy matematické statistiky, MatfyzPress, Praha, 2011 (in Czech) 	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 158					
A	B	C	D	E	FX
25.32	20.89	13.92	18.99	12.66	8.23
Provides: doc. RNDr. Martina Hančová, PhD.					
Date of last modification: 14.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ MTM/14		Course name: Mathematics			
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present					
Number of ECTS credits: 1					
Recommended semester/trimester of the course:					
Course level: I.					
Prerequisites: ÚMV/MAN2c/10 and ÚMV/ALG2b/10 and ÚMV/ATC/10					
Conditions for course completion: Acquiring the required number of credits in the structure defined by the study plan.					
Learning outcomes: Evaluation of student's competences with respect to the profile of the graduate.					
Brief outline of the course:					
Recommended literature:					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 86					
A	B	C	D	E	FX
31.4	19.77	22.09	17.44	9.3	0.0
Provides:					
Date of last modification: 21.05.2016					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ MIE/13		Course name: Microeconomics			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present					
Number of ECTS credits: 4					
Recommended semester/trimester of the course: 5.					
Course level: I.					
Prerequisites:					
Conditions for course completion: Continuous assessment: feedback in MOODLE, small tests during tutorial (notions), two written exams (solving problems). Final oral exam: ability of verbal argumentation and graphical explanation of studied models.					
Learning outcomes: Understanding of basic principles of microeconomics and ability to apply them in practical situations.					
Brief outline of the course: Economics and economy. Supply and demand. Consumer Theory. Theory of firm. Perfect competition. Monopoly. Labour market. Market failure. Externalities and Public goods.					
Recommended literature: 1. lms.upjs.sk: lectures, tutorials and other material 2. H.L. Varian, Intermediate Mikroekonomics, WW Norton, 1993 3. J.M. Perloff, Microeconomics, 6th Edition, Addison Wesley, 2012 4. J. Sloman, Economics, 6th Edition, Prentice Hall, 2006					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 85					
A	B	C	D	E	FX
24.71	23.53	17.65	18.82	12.94	2.35
Provides: prof. RNDr. Katarína Cechlárová, DrSc.					
Date of last modification: 17.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KPE/MMKV/17		Course name: Multiculturalism and Multicultural Education			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of ECTS credits: 2					
Recommended semester/trimester of the course: 4.					
Course level: I.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 191					
A	B	C	D	E	FX
41.88	42.93	13.61	1.05	0.52	0.0
Provides: PaedDr. Michal Novocký, PhD.					
Date of last modification: 20.06.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/TCS/10		Course name: Number theory			
Course type, scope and the method: Course type: Lecture Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of ECTS credits: 3					
Recommended semester/trimester of the course: 5.					
Course level: I.					
Prerequisites: ÚMV/ATC/10					
Conditions for course completion: According to tests and exam.					
Learning outcomes: To obtain knowledge on quadratic congruences.					
Brief outline of the course: Chinese remainder theorem, Euler function, quadratic congruences, Pythagorean equation.					
Recommended literature: M. B. Nathanson: Elementary Methods in Number Theory. Springer, 2000. H. E. Rose: A Course in Number Theory. Clarendon Press, Oxford, 1994.					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 104					
A	B	C	D	E	FX
34.62	26.92	22.12	14.42	1.92	0.0
Provides:					
Date of last modification: 03.05.2015					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ OSY1/21	Course name: Operating systems
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 3.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Oral exam	
Learning outcomes: Student obtains base knowledge about the properties and internal processes of operating systems, their structure and concept. By completing the course, the student will gain a comprehensive picture of the life cycle of processes, their planning and communication between them. He will also get a knowledge of physical, logical and virtual memory management and understands synchronization as well as phenomena such as deadlocks or starvation. The acquired knowledge will enable the student to understand the behavior of the operating system, which leads to gaining the ability to intervene with running operating system, eventually optimize it.	
Brief outline of the course: <ol style="list-style-type: none"> 1. History, development, user interface and structure of operating systems. 2. Kernel of the operating system and system calls, implementation. 3. Process - definition, structure, life cycle, implementation. 4. Process - planning algorithms, multiprocessing. 5. Process - inter-process communication. 6. Thread - definition, structure, life cycle, implementation. 7. Synchronization of processes and system resources. 8. Deadlock and starvation - prevention, detection, recovery. 9. Memory - definition, types of memories, usage, volatility, DMA. 10. Memory - allocation strategies, paging, fragmentation. 11. Memory - MMU, TLB, MPU, segmentation. 12. Memory - virtual memory management strategies. 13. File system - definition, structure, implementation. 14. File system - file, directory, attributes, access control, ACL. 	
Recommended literature: <ol style="list-style-type: none"> 1. SILBERSCHATZ, Abraham, Peter B. GALVIN a Greg GAGNE. Operating System Concepts. 10th Revised edition. New York, United States: John Wiley, 2021. ISBN 9781119800361. 2. TANENBAUM, Andrew, Herbert BOS. Modern Operating Systems. 4th edition. London, UK: Pearson Education Limited, 2014. ISBN 9781292061429. 	

3. The Linux Kernel documentation. Linux Kernel Library [online]. Dostupné z: <https://www.kernel.org/doc/html/latest/>
4. DOWNEY, Allen B. The Little Book of Semaphores [online]. Version 2.2.1. Green Tea Press, 2016. Dostupné z: <https://greenteapress.com/semaphores/LittleBookOfSemaphores.pdf>

Course language:

Slovak or English

Notes:**Course assessment**

Total number of assessed students: 185

A	B	C	D	E	FX
23.24	22.16	19.46	23.78	9.73	1.62

Provides: RNDr. PhDr. Peter Pisarčík

Date of last modification: 08.10.2021

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KPE/ Pg/15		Course name: Pedagogy			
Course type, scope and the method: Course type: Lecture Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of ECTS credits: 2					
Recommended semester/trimester of the course: 3., 5.					
Course level: I.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 961					
A	B	C	D	E	FX
23.1	29.24	23.41	13.84	8.84	1.56
Provides: PaedDr. Michal Novocký, PhD.					
Date of last modification: 20.06.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/PP/15	Course name: Positive Psychology
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 4., 6.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Assessment is based on interim evaluation. The subject will be taught in both present and distance format. Up-to-date information concerning the subject for the given academic year can be found on the electronic board of the subject in the Academic information system of the UPJŠ.	
Learning outcomes: Students will acquire basic knowledge concerning the reasons for founding Positive psychology, its main theory, current research, as well as application of Positive psychology as a new and rapidly developing field within psychology. Students will also gain experience in applying critical thinking to the challenges and issues that Positive psychology brings and raises in the context of the individual in contemporary society. Emphasis is placed on the ability to critically evaluate current topics of positive psychology.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Different perspectives on well-being nad happiness in psychology 2. Main theoretical approaches to positive psychology 3. Positive emotions and positivity 4. Meaningfulness 5. Positive interpersonal relations 6. Post-traumatic growth 7. Hope and optimism 8. Gratitude 9. Spirituality as a personality dimension 10. Wisdom 11. Positive institutions 12. New themes and topics in PP 	
Recommended literature: Brewer, M. B, Hwestone, M: Emotion and Motivation, Blackwell, 2004 Deci, E., Ryan R. M., Handbook of Self – Determination Reasearch, Rochester, 2002 Křivohlavý, J.: Pozitivní psychologie. Praha, Portál, 2003 Křivohlavý, J.: Psychologie vděčnosti a nevďčnosti. Praha, Grada, 2007 Křivohlavý, J.: Psychologie moudrosti a dobrého života, Praha, Grada, 2012	

Křivohlavý, J.: Psychologie pocitu štěstí, Grada, 2013 McAdams, D. P., The Person, New York, 2002 Seligman, M. E. P., & Csikszentmihalyi, M. (Eds.). (2000). Positive psychology [Special issue] American Psychologist, 55(1). Říčan, P.: Psychologie náboženství a spirituality, Praha, Portál, 2007 Slezáčková, A.: Průvodce pozitivní psychologií, Praha, Grada, 2012					
Course language:					
Notes:					
Course assessment Total number of assessed students: 408					
A	B	C	D	E	FX
98.28	1.23	0.25	0.0	0.25	0.0
Provides: Mgr. Jozef Benka, PhD.					
Date of last modification: 24.06.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ PRP2/15	Course name: Principles of computers
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 2.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Graded activities: assignments, mid semester exam, final exam	
Learning outcomes: <ul style="list-style-type: none"> - Know brief history of computer, classification and construction principles of computers of von Neumann type. - Understand relation between real numbers, integers and their binary representation as well as be able to perform basic arithmetic and logic operations over binary represented numbers. - Learn basics about logic gates, combination and sequence circuits and their structure. Understand principles of how basic circuits realize arithmetic-logic unit and other parts of computers e.g. memory. - Know principles of communication of processor and other devices via interruptions and direct memory access. - Get idea of device drivers, device controllers and their functionality. 	
Brief outline of the course: <ol style="list-style-type: none"> 1. Computers of von Neumann type, brief history of computer science. 2. Encoding of integers, real numbers and arithmetic operations. Encoding of symbols. 3. Logic functions and their realization and optimisation. 4. Combination circuits. Realization of basic functional and control elements on computer circuits. 5. Arithmetic logic unit and its realization. 6. Sequential circuits, memory cell, organization of memory matrix, types of memories. 7. Machine cycle. 8. Types of instruction and instructions sets. 9. Instruction cycle and processing of instructions. 10. Memory and memory subsystem. 11. Communication between processor and peripheral devices. Input output devices, mechanism of interruption in computer, direct memory access. Functionality of device drivers. Device controllers and functionality. 12. Portability of programs. External and peripheral memories their principles and their use. Graphical adapters, monitors, printers, digital scanners. 	
Recommended literature:	

1. STALLINGS, William. Computer Organization and Architecture. Prentice Hall, 2002. ISBN 978-0-13-410161-3. 2. DEMBOWSKI, Klaus. Mistrovství v hardware. Computer Press, 2009. ISBN 978-80-251-2310-2. 3. MINASI, Mark. Velký průvodce hardwarem. Grada, 2002. ISBN 978-80-251-2310-2.					
Course language: Slovak or English					
Notes:					
Course assessment Total number of assessed students: 301					
A	B	C	D	E	FX
28.57	16.28	15.61	12.62	22.26	4.65
Provides: RNDr. Juraj Šebej, PhD.					
Date of last modification: 23.11.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ PBS/15	Course name: Pro-seminar to bachelor thesis
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 1 Per study period: 14 Course method: present	
Number of ECTS credits: 1	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Creating a website about a bachelor's thesis. Selection of bachelor thesis topic. Presentation of the bachelor's thesis assignment and its objectives. Preparation of an essay in the extent of 1 page on the motivation to select a bachelor's thesis. Creation of the bachelor's thesis assignment and its insertion into the AIS by the thesis supervisor.	
Learning outcomes: Basic knowledge of the principles of creation and structure of bachelor's theses. Criteria and requirements for selecting an appropriate bachelor thesis topic. Knowledge about the structure of the bachelor's thesis assignment.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Principles in creating a final thesis. 2. The presentations of bachelor thesis topics by potential supervisors. 3. The presentations of bachelor thesis topics by potential supervisors. 4. The presentations of bachelor thesis topics by potential supervisors. 5. Bachelor thesis and its objectives. 6. Assignment of bachelor thesis. 7. Basic types of bachelor theses. 8. Structure of different types of bachelor theses. 9. Requirements for final bachelor theses. 10. External company final theses. 11. Presentation of selected topics of final theses. 12. Presentation of selected topics of final theses. 13. Presentation of selected topics of final theses. 	
Recommended literature: <ol style="list-style-type: none"> 1. STN 01 6910. Rules of writing and editing documents. 2011. 2. STN ISO 2145. Documentation. Numbering of sections and subsections of written documents. 1997. 3. STN ISO 690. Information and documentation. Instructions for creating bibliographic references to information sources and their citation. 2012 4. KATUŠČÁK, Daniel. How to write final and qualification theses. Enigma, 2013 	

5. Scientific literature related to the topic of the final thesis according to the recommendation of the thesis supervisor.	
Course language: Slovak or English	
Notes:	
Course assessment Total number of assessed students: 344	
abs	n
94.77	5.23
Provides: doc. RNDr. Ľubomír Antoni, PhD.	
Date of last modification: 08.01.2022	
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ TPP/19	Course name: Probability theory
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisites: ÚMV/MAN1c/22 or ÚMV/MAN2c/22 or ÚMV/FRPa/19	
Conditions for course completion: To obtain at least 50% in two written tests during the semester. Total evaluation based on written tests and oral exam.	
Learning outcomes: To obtain knowledge of the axiomatic theory of probability, random variables and their characteristics, special types of distributions and their applications.	
Brief outline of the course: Probability space, definitions and properties of probability. Conditional probability and independence. Random variables, their distribution function and characteristics. Mean, variance and skewness. Discrete and absolutely continuous distributions. Quantile and characteristic functions, their properties. Relation between characteristic function and moments. Median and mode. Transformation of random variables. Special types of distributions with applications (binomial, Poisson, geometric, uniform, exponential, normal, chi-square, Student, Fisher). Central limit theorem.	
Recommended literature: 1. Skřivánková V.: Pravdepodobnosť v príkladoch, UPJŠ, Košice, 2006 (in Slovak) 2. DeGroot, M. H., Schervish, M. J.: Probability and Statistics, 4th ed., Pearson, Boston, 2012 3. Evans, M. J., Rosenthal, J. S.: Probability and Statistics: The Science of Uncertainty, 2nd Ed., W. H. Freeman, 2009 4. Riečan et al.: Pravdepodobnosť a matematická štatistika, Alfa, Bratislava, 1984 (in Slovak) 5. Potocký a kol.: Zbierka úloh z pravdepodobnosti a matematickej štatistiky, Alfa, Bratislava, 1991	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 359					
A	B	C	D	E	FX
14.48	13.93	17.27	21.73	25.07	7.52
Provides: doc. RNDr. Daniel Klein, PhD., RNDr. Andrej Gajdoš, PhD.					
Date of last modification: 27.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/SPP1a/15	Course name: Programming environments in schools I
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 3.	
Course level: I.	
Prerequisites: ÚINF/PAZ1a/15	
Conditions for course completion: At least 50 % of the marks in the intermediate assessment A minimum of 50 % marks in the mid-term and end-of-semester practical tests	
Learning outcomes: Ability to implement more complex algorithms in the Python programming language. Ability to design and program educational software in the Python programming language. Formulate and solve school computer science problems.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Introduction to Python, basic features of Python, syntax. 2. Simple data types (number, logical type), structured types (string, list, dictionary, set, tuple). 3. Control structures (loops, conditional statements, exception management). 4. Function definition (parameters, return value), function documentation. 5. Import and creation of modules. 6. Error types and error condition handling. Exception handling and raising. 7. Saving data to a file and reading data from a file. Data serializing. Open data and its analysis. 8. Testing the correctness of algorithms (doctest, unittest), test data. 9. Object-oriented programming. Design and implementation of custom classes. 10. Creation of graphical interface of programs. 11. Design criteria, design and programming of educational software. 12. Solving more complex algorithmic problems from real life or school practice using the object-oriented approach and the resources of the Python programming language. 	
Recommended literature: PILGRIM, Mark. Ponořme se do Python(u) 3: Dive into Python 3. 1. Praha: CZ.NIC, c2010, 430 s. CZ.NIC. ISBN 978-80-904248-2-1. Dostupné také z: http://knihy.nic.cz/files/nic/edice/mark_pilgrim_dip3_ver3.pdf SHIPMAN, John W. Tkinter 8.5 reference: a GUI for Python. Socorro, NM 87801: New Mexico Tech Computer Center, 2013. Dostupné také z: https://anzeljg.github.io/rin2/book2/2405/docs/tkinter/tkinter.pdf	

<p>GUNIŠ, Ján, Viera MICHALIČKOVÁ, Martin CÁPAY a Ľubomír ŠNAJDER. Riešenie problémov a programovanie. Bratislava: Centrum vedecko-technických informácií SR, 2020. ISBN 978-80-89965-62-5.</p> <p>HETLAND, Magnus Lie. Beginning Python: from novice to professional. New York: Distributed to the book trade worldwide by Springer-Verlag, c2005. ISBN 1-59059-519-X.</p> <p>KRNÁČ, Jozef, Miloslava SUDOLSKÁ a Ľudovít TRAJTEL. Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika: Učiteľ s kompetenciami programátora. Bratislava: Štátny pedagogický ústav Bratislava, 2010. ISBN 978-80-8118-083-5.</p>					
<p>Course language: Slovak language, knowledge of English is only required to read Python documentation.</p>					
<p>Notes:</p>					
<p>Course assessment Total number of assessed students: 28</p>					
A	B	C	D	E	FX
17.86	21.43	39.29	7.14	10.71	3.57
<p>Provides: PaedDr. Ján Guniš, PhD.</p>					
<p>Date of last modification: 31.08.2021</p>					
<p>Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.</p>					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ SPP1b/15	Course name: Programming environments in schools II
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 6.	
Course level: I., N	
Prerequisites: ÚINF/SPP1a/15	
Conditions for course completion: Conditions for ongoing evaluation: <ol style="list-style-type: none"> 1. Educational software or game programmed in the Scratch environment, 2. A programming etude created for learning of programming in the MIT App Inventor environment. 3. Educational or assistive software programmed in the MIT App Inventor environment. 4. A programmed project using the BBC micro: bit kit. Conditions for successful completion of the course: Obtaining at least 50% of points for ongoing assignments.	
Learning outcomes: After completing this course, students are able to: <ol style="list-style-type: none"> a) get an overview of educational programming environments, b) acquire programming skills in selected educational programming environments, c) develop the ability to design and program educational software for devices using their sensors and actuators. 	
Brief outline of the course: <ol style="list-style-type: none"> 1. Teaching algorithmization and programming in primary and secondary school - objectives, content, textbooks and methodological materials. Algorithmic computer games. 2. Programming in the Scratch environment. 3. Programming in the Scratch environment. 4. Programming in the Scratch environment. 5. Programming of mobile devices in the MIT App Inventor environment. 6. Programming of mobile devices in the MIT App Inventor environment. 7. Programming of mobile devices in the MIT App Inventor environment. 8. Programming of mobile devices in the MIT App Inventor environment. 9. Programming of mobile devices in the MIT App Inventor environment. 10. Programming BBC micro: bit kits in MS MakeCode environment. 11. Programming BBC micro: bit kits in MS MakeCode environment. 12. Overview of educational programming initiatives and development environments. 	
Recommended literature:	

BELL, Charles A., 2017. Micropython for the internet of things: a beginner's guide to programming with Python on microcontrollers. New York, NY: Springer Science+Business Media. ISBN 9781484231227.

GUTSCHANK, Jörg et al., 2019. Coding in STEM Education [online]. Berlin: Science on Stage Deutschland e.V., 76 p. [cited 2021-7-10]. ISBN 978-3-942524-58-2. Available from: https://www.science-on-stage.eu/sites/default/files/material/coding_in_stem_education_en_2nd_edition.pdf

ŠNAJDER, Ľubomír, Gabriela LOVÁSZOVÁ, Viera MICHALIČKOVÁ and Ján GUNIŠ, 2020. Programovanie mobilných zariadení [online]. Bratislava: Centrum vedecko-technických informácií SR, 300 p. [cited 2020-11-30]. ISBN 978-80-89965-63-2. Available from: <https://registracia.itakademia.sk/media/themes/nip-pmz.pdf>

WOLBER, David, 2014. App Inventor: Vytvořte si vlastní aplikaci pro Android. Brno: Computer Press. ISBN 978-80-251-4195-3.

LOVÁSZOVÁ, Gabriela, Jana GALBAVÁ, Viera PALMÁROVÁ and Monika TOMCSÁNYIOVÁ, 2010. Ďalšie vzdelávanie učiteľov základných škôl a stredných škôl v predmete informatika: Malé programovacie jazyky. Bratislava: Štátny pedagogický ústav. ISBN 978-80-8118-066-8.

CODE.ORG. Learn today, build a brighter tomorrow.

Code.org [online]. [cited 2021-7-13]. Available from: <https://code.org/>

THE LIFELONG KINDERGARTEN GROUP AT MIT MEDIA LAB. Scratch - Imagine, Program, Share [online]. [cited 2021-7-13]. Available from: <https://scratch.mit.edu/>

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. MIT App Inventor

Explore MIT App Inventor [online]. [cited 2021-7-13]. Available from: <http://appinventor.mit.edu/>

MICRO:BIT EDUCATIONAL FOUNDATION. BBC micro:bit [online]. [cited 2021-7-13]. Available from: <https://microbit.org/>

SPY O.Z. Učíme s Hardvérom [online]. [cited 2021-7-13]. Available from: <https://www.ucimeshardverom.sk/>

Course language:

Slovak or English

Notes:

By default, teaching is carried out face to face. If this is not possible (eg due to a pandemic), teaching is provided at a distance through video conferencing programs and LMS.

Course assessment

Total number of assessed students: 20

A	B	C	D	E	FX
25.0	20.0	15.0	20.0	5.0	15.0

Provides: doc. RNDr. Ľubomír Šnajder, PhD.

Date of last modification: 01.08.2021

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ PRS/15	Course name: Programming of robotic kits
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 3 Per study period: 42 Course method: present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 3.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Evaluation of independent work with kits and in educational programming environments in solving robotic mini-projects. Creation of own task and presentation of the solution with methodological recommendations.	
Learning outcomes: 1. To acquire an overview of robotic sets and robotic programming environments. 2. To acquire skills in constructing and programming robots in selected robotic programming environments.	
Brief outline of the course: 1. Robotic kit (Lego Mindstorms EV3 and Spike Prime) - parts, motors, sensors, basics of building mechanical parts of models 2. Programming of robotic models in Lego Education Mindstorms EV3 and Classroom, Lego Education Spike - branching commands, cycles, blocks, events, parallel processes, working with sensors, datalogging. Creating mini-projects (eg explorer, rescuer, parking, Super Cleanup, Life Hacks, Rain or shine?) 3. Programming of robotic models in the block programming environment EV3 and Spike - creation of mini-projects 4. Robotic competitions, ideas for more demanding projects. 5. Creation and presentation of the final project - a programmed robotic model (eg going through a maze, sports, rescuer) with documentation.	
Recommended literature: 1. BUMGARDNER, J. (2007) The Origins of Mindstorms. Wired, 2007. http://www.wired.com/geekdad/2007/03/the_origins_of_/ 2. Carnegie Mellon. Robotics Academy. http://www.education.rec.ri.cmu.edu/ 3. Pavel Petrovič, http://robotika.sk/events/18Skolenia/priruckaEV3.pdf 4. Get ready with Lessons: https://education.lego.com/en-us/lesson 5. LEGO® Education Professional Development, https://education.lego.com/en-us/professional-development#about 6. SCRATCH Programming Lessons, https://primelessons.org/en/Lessons.html ,	

Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 52					
A	B	C	D	E	FX
51.92	25.0	11.54	1.92	0.0	9.62
Provides: Ing. Angelika Hanesz					
Date of last modification: 23.11.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/PSW1/06	Course name: Programming of web-pages
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisites: (ÚINF/DBS1a/15 or ÚINF/DBS/15) and (ÚINF/PAZ1a/15 or ÚINF/PRG1/15)	
Conditions for course completion: 50% of the marks from continuous assignments	
Learning outcomes: An overview of modern technologies for creating dynamic websites. Describing and applying the basic principles of creating dynamic web pages. Utilize client-side (JavaScript) and server-side (PHP) web programming technologies. Using relational databases (MySQL) to create application web pages. Know the security risks of dynamic websites and be able to eliminate them.	
Brief outline of the course: <ol style="list-style-type: none"> 1. JavaScript - introduction to JavaScript programming. 2. JavaScript - communication with the user, validation of data in forms using JavaScript. 3. JavaScript - introduction to using the jQuery library. 4. PHP - introduction to PHP programming. 5. PHP - data and control structures of the PHP language. 6. PHP - communication with the user, validation of data in forms using PHP. 7. PHP - object oriented problem solving in PHP language. File manipulation. 8. PHP - User authentication (cookies, session). 9. MySQL - introduction to working with MySQL database system. 10. MySQL - Simple applications using the database for data storage and access. 11. Web application security - an introduction to web application security. 12. Web application security - the most common web application security problems and how to eliminate them. 	
Recommended literature: BLUM, Richard. PHP, MySQL& JavaScript: All-in-One. Hoboken, New Jersey: John Wiley, 2018. ISBN 978-1-119-46838-7. KROMANN, Frank M. Beginning PHP and MySQL: From Novice to Professional. 5. CA, USA: Apress, 2018. ISBN 978-1-4302-6043-1. HUSEBY, Sverre H. Zraniteľný kód. Brno: Computer Press, 2006, 207 s. ISBN 80-251-1180-6. SNYDER, Chris, Thomas MYER a Michael SOUTHWELL. Pro PHP Security: From Application Security Principles to the Implementation of XSS Defenses. 2. United States of America: Apress, 2010. ISBN 978-1-4302-3318-3.	

Course language: Slovak language, knowledge of English language is only necessary for reading documentation.			
Notes: Content prerequisite: WBdi/15 Web and user interface design			
Course assessment Total number of assessed students: 24			
abs	n	neabs	z
66.67	33.33	0.0	0.0
Provides: PaedDr. Ján Guniš, PhD.			
Date of last modification: 08.01.2022			
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.			

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ PAZ1a/15	Course name: Programming, algorithms, and complexity
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 3 / 4 Per study period: 42 / 56 Course method: present	
Number of ECTS credits: 8	
Recommended semester/trimester of the course: 1.	
Course level: I., II.	
Prerequisites:	
Conditions for course completion: Graded activities during semester: assignments, small exams, midterm, final project. Final examination: practical finalterm focused on a complex task. Rules to pass the subject: Pass the minimal limit of points for category of homeworks (assignments, final project) and tests (small exams, midterm). Get at least 42% from the finalterm and pass the defined limit of total points for all graded activities.	
Learning outcomes: Get an ability to implement basic Java programs and obtain essential knowledge related to object-oriented programming.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Introduction to Java and JPAZ2 framework, first Eclipse project, interactive communication with objects using turtle graphics, repeating code in loops, notion of class, object, and method. 2. For-loops, local variables, variable types, arithmetic expressions, random numbers, random walk, conditions. 3. While-loop, returning a value from a method, reference and reference variables, debugging. 4. Primitive and reference types, chars, String objects (including basic algorithms), mouse events, instance variables. 5. Array of primitive values and array of references, simple array algorithms. 6. Advanced array algorithms, two-dimensional array. 7. Exceptions and exception handling, files and directories, writing to text files. 8. Reading from text files. 9. Creating classes, encapsulation, getters and setters, constructors and their hierarchy, method overloading. 10. Inheritance and polymorphism. 11. Java Collections Framework, ArrayList class, wrapper classes for primitive types and autoboxing, interfaces List, Set, Map and their implementations, methods equals and hashCode. 12. Access modifiers, abstract classes and methods, creating and implementing interfaces, sorting, static methods and variables. 13. Creating and throwing exceptions, checked and runtime exceptions, JavaDoc, Maven. 	
Recommended literature:	

1. ECKEL, Bruce. Thinking in Java. Fourth edition. Upper Saddle River, NJ: Prentice Hall, c[2006]. ISBN 978-01-318-7248-6.
2. PECINOVSKÝ, Rudolf. OOP: naučte se myslet a programovat objektově. Brno: Computer Press, 2010. ISBN 978-80-251-2126-9.
3. SIERRA, Kathy a Bert BATES. Head first Java. Vyd. 2. Sebastopol: O'Reilly, 2005. ISBN 978-05-960-0920-5.

Course language:

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

Notes:

Course assessment

Total number of assessed students: 836

A	B	C	D	E	FX
16.03	8.49	11.24	17.34	14.0	32.89

Provides: RNDr. Juraj Šebej, PhD., RNDr. Miroslav Opiela, PhD., Bc. Antónia Matisová, RNDr. Zoltán Szoplák

Date of last modification: 04.01.2022

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ PAZ1b/15	Course name: Programming, algorithms, and complexity
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 4 Per study period: 28 / 56 Course method: present	
Number of ECTS credits: 7	
Recommended semester/trimester of the course: 2.	
Course level: I., II.	
Prerequisites: ÚINF/PAZ1a/15	
Conditions for course completion: Graded activities during semester: assignments, small theoretical exams, practical and theoretical midterm. Final examination: practical and theoretical finalterm. Rules to pass the subject: Get at least 50% from theoretical activities (small exams, theoretical midterm and theoretical finalterm) and from practical activities (practical midterm and finalterm). Pass the defined limit of total points for all graded activities.	
Learning outcomes: To know essential algorithms, data structures, and methods used for efficient algorithms design. To understand time complexity analysis. To practice efficient implementation of algorithms. To recognize combinatorial and graph algorithms.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Recursion and fractals. 2. Binary search, basic sorting algorithms, time complexity analysis, O-notation. 3. Basic data structures and algorithms: linked list, stack, queue. 4. Trees and their applications. 5. Efficient sorting algorithms (QuickSort, MergeSort, HeapSort). 6. Backtracking. 7. Dynamic programming, divide and conquer strategy. 8. Unweighted graphs, graph traversal, graph topological sort. 9. Weighted graphs, the shortest path algorithms. 10. Minimum spanning tree, greedy algorithms. 11. Hashing, amortized time complexity, string-searching algorithms. 	
Recommended literature: <ol style="list-style-type: none"> 1. WRÓBLEWSKI, Piotr. Algoritmy: datové struktury a programovací techniky. Brno: Computer Press, 2004. ISBN 80-251-0343-9. 2. CORMEN, Thomas H. Introduction to algorithms. 3rd ed. Cambridge: MIT Press, c2009. ISBN 978-0-262-03384-8. 3. KLEINBERG, Jon a Éva TARDOS. Algorithm design. Thirteenth impression. Noida, India: Pearson, c2014. ISBN 9789332518643. 	

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

Course language:

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

Notes:

Course assessment

Total number of assessed students: 1303

A	B	C	D	E	FX
14.27	7.6	10.74	18.88	20.95	27.55

Provides: RNDr. Juraj Šebej, PhD., RNDr. Miroslav Opiela, PhD., Mgr. Viktor Pristaš, RNDr. Šimon Horvát, PhD., RNDr. Zoltán Szoplák

Date of last modification: 04.01.2022

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KPPaPZ/Ps/15		Course name: Psychology			
Course type, scope and the method: Course type: Lecture Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of ECTS credits: 2					
Recommended semester/trimester of the course: 1., 3., 5.					
Course level: I.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 749					
A	B	C	D	E	FX
36.85	18.42	16.82	13.48	12.42	2.0
Provides: PhDr. Anna Janovská, PhD., Mgr. Ondrej Kalina, PhD.					
Date of last modification: 24.06.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/PKŽ/15	Course name: Psychology of Everyday Life
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: I.	
Prerequisites:	
Conditions for course completion: The evaluation of the course and its subsequent completion will be based on clearly and objectively set requirements, which will be set in advance and will not change. The aim of the assessment is to ensure an objective and fair mapping of the student's knowledge while adhering to all ethical and moral standards. There is no tolerance for students' fraudulent behavior, whether in the teaching process or in the assessment process. 1. Active participation in seminars 2. Elaboration and presentation of PPT presentation on the assigned topic. Maximum number of points 20; minimum number of points 11. 3. Elaboration of an essay in the range of 4xA4 (standard pages). Maximum number of points 20; minimum number of points 11. The final evaluation (grade) is the sum of points for the presentation and the essay. A 40b - 37b B 36b - 33b C 32b - 29b D 28b - 25b E 24b - 21b FX 20b - 0b	
Learning outcomes: The student is able to demonstrate an understanding of the individual's behavior in selected everyday situations such as conflict, group influence, empathy, helping, aggression, etc. The student is able to describe, explain and evaluate the psychological mechanisms that occur in everyday situations. The student is able to apply basic psychological knowledge to himself (self-regulation) but also in interaction with others (cooperation). The method of teaching the subject will be oriented to the student. Speakers will be interested in the needs, expectations and opinions of students so as to encourage them to think critically by expressing respect and feedback on their opinions and needs. The content of the curriculum will be based on primary and high-quality sources that will reflect the topicality of the topics so as to ensure the connection of the curriculum with other subjects and also	

the connection of the curriculum with practice. Students will be expected to take an active approach in lectures and seminars with an emphasis on their independence and responsibility.					
Brief outline of the course: How to understand human behavior (overview of basic approaches in psychology); Basic overview of cognitive processes; Learning processes and their use in practice; Social influences, prosocial and antisocial behavior; How human emotions and motivations work; Deciding - why and when we take risks; Childhood experiences and their relationship to adulthood; Abnormal behavior, mental disorders and therapeutic approaches					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 208					
A	B	C	D	E	FX
42.79	21.15	28.85	5.29	1.44	0.48
Provides: Mgr. Ondrej Kalina, PhD.					
Date of last modification: 24.06.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ RPBI/20	Course name: Resolving computer security incidents
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 3 Per study period: 42 Course method: present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 6.	
Course level: I., II.	
Prerequisites:	
Conditions for course completion: The condition for passing the course are homeworks (50% of the total number of points) and the final practical task (50% of the total number of points).	
Learning outcomes: The result of the education is an understanding of the basic approaches to solving computer security incidents from procedural and legal requirements to ways of identifying the security incident and the method of its technical solution.	
Brief outline of the course: 1. Introduction to computer security incident handling and response, 2. The process of handling and response to computer security incidents and computer security incident response teams, 3. Legal aspects of the computer security incidents handling, 4. Preparing for the security incidents handling and the first response, 5. Introduction to digital forensic analysis, 6. Incident handling and response to computer security incidents in the field of malware, 7. Incident handling and response to computer security incidents in the field of email communication, 8. Incident handling and response to network security incidents I., 9. Incident handling and response to network security incidents II., 10. Incident handling and response to computer security incidents in the field of web applications I., 11. Incident handling and response to computer security incidents in the field of web applications II., 12. Incident handling and response to cloud security incidents, 13. Incident handling and response to cyber security incidents in the field of insiders, 14. Final assignment.	
Recommended literature: 1. MURDOCH, Don. Blue Team Handbook: Incident Response Edition: A condensed field guide for the Cyber Security Incident Responder. South Carolina, United States: CreateSpace Independent Publishing Platform, 2014. ISBN 978-1500734756, 2. ANSON, Steve. Applied Incident Response. New York, United States: Wiley, 2020. ISBN 978-1119560265, 3. ROBERTS, Scott. Intelligence-Driven Incident Response: Outwitting the Adversary. Sebastopol, California, United States: O'Reilly Media, 2017. ISBN 978-1491934944.	
Course language: Slovak or English	
Notes:	

Content prerequisites: basic knowledge in the field of information security, basics of working with the Linux operating system, basic knowledge of computer networks.					
Course assessment					
Total number of assessed students: 15					
A	B	C	D	E	FX
66.67	26.67	0.0	6.67	0.0	0.0
Provides: doc. RNDr. JUDr. Pavol Sokol, PhD.					
Date of last modification: 26.09.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KPE/ OLŠ/15		Course name: School Administration and Legislation			
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., 5.					
Course level: I.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 285					
A	B	C	D	E	FX
45.61	29.82	14.39	6.32	3.16	0.7
Provides: PaedDr. Michal Novocký, PhD.					
Date of last modification: 20.06.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ ÚTVŠ/CM/13	Course name: 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.	
Prerequisites:	
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.	

2. ČECHOVSKÁ, I., MILEROVÁ, H., NOVOTNÁ, V. Aqua-fitness. Praha: Grada. 136 s. 3. EVANS, M., HUDSON, J., TUCKER, P. 2001. Umění harmonie: meditace, jóga, tai-či, strečink. 192 s. 4. JARKOVSKÁ, H., JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. 209 s. 5. 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	88.89
Provides: Mgr. Agata Dorota Horbacz, PhD.	
Date of last modification: 29.03.2022	
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KF/VKFV/07		Course name: Selected Topics in Philosophy of Education (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 ECTS credits: 2					
Recommended semester/trimester of the course: 3., 5.					
Course level: I.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 16					
A	B	C	D	E	FX
37.5	37.5	18.75	6.25	0.0	0.0
Provides: PhDr. Dušan Hruška, PhD.					
Date of last modification: 13.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ VKA/10		Course name: Selected topics in algebra			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present					
Number of ECTS credits: 4					
Recommended semester/trimester of the course: 6.					
Course level: I.					
Prerequisites:					
Conditions for course completion: According to tests and to the exam.					
Learning outcomes: To develop students' abstract thinking. Follow up on the acquired knowledge of algebra, expand it and generalize; be able to apply the acquired knowledge to specific examples. Demonstrate knowledge of mathematical content in context.					
Brief outline of the course: Relations, operations, algebraic structures. Substructures. Homomorphisms, isomorphisms. Congruences, homomorphism theorems. Terms, term operations, identities.					
Recommended literature: B. Jónsson: Topics in Universal Algebra, Springer-Verlag 1972 M. Kolibiar a kol.: Algebra a príbuzné disciplíny, Bratislava 1992 S.N. Burris and H.P. Sankappanavar: A Course in Universal Algebra 2000, http://www.math.uwaterloo.ca/~snburris/htdocs/ualg.html					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 72					
A	B	C	D	E	FX
16.67	20.83	25.0	19.44	13.89	4.17
Provides: prof. RNDr. Danica Studenovská, CSc.					
Date of last modification: 24.11.2021					

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚMV/ VEM/10		Course name: Selected topics in elementary mathematics			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 1 / 1 Per study period: 14 / 14 Course method: present					
Number of ECTS credits: 3					
Recommended semester/trimester of the course: 5.					
Course level: I.					
Prerequisites: ÚMV/MAN2c/10					
Conditions for course completion: It is based on the results of written and oral exam.					
Learning outcomes: Obtain knowledge about the structure of elementary mathematics with respect to advanced mathematics; the development of mathematical skills of prospective teachers.					
Brief outline of the course: Theory of Equations and Inequalities, Solving Higher Order Polynomials, The Role of CAS systems in Solving Equations and Inequalities, Building the Real Number System, Rational and Irrational Numbers, Farey Sequences, Review of Geometric Series: Preparation for Decimal Representation, Decimal Expansion, Decimal Periodicity, Building the Complex Numbers, Operating on the Complex Numbers, Picturing Complex Numbers and Connections to Transformation Geometry, The Polar Form of Complex Numbers and De Moivre's Theorem, Some Connections to Roots of Polynomials, Euler's Identity and the Irrationality of e, Functions and Modeling, Ways of Representing Functions, Solutions of Cubic Equations Using Trigonometry					
Recommended literature: W.W. Esty: The Language of Mathematics, Montana State University, 2007. F. Klein: Elementary mathematics from an advanced standpoint, Dower Publications, 1945.					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 45					
A	B	C	D	E	FX
6.67	28.89	13.33	26.67	24.44	0.0
Provides: prof. RNDr. Jozef Doboš, CSc.					

Date of last modification: 17.09.2021
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ SHM/10	Course name: Seminar on history of mathematics
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 6.	
Course level: I., II.	
Prerequisites:	
Conditions for course completion: Conditions for continuous evaluation: <ol style="list-style-type: none"> 1. Participation in teaching in accordance with the study rules and instructions of the teacher. 2. Activity. 3. Homework and tests. 4. Seminar work and its presentation at the seminar – poster from history of mathematics on the selected topic Conditions for successful completion of the course: <ol style="list-style-type: none"> 1. Participation in teaching in accordance with the study regulations and according to the instructions of the teacher; 2. Credits will be awarded to students who score at least 50% on homework assignments and tests. Additional points can be achieved for the presentation of a seminar paper. 	
Learning outcomes: Students will demonstrate an understanding of the history of the development of some mathematical disciplines and selected concepts, and parallels between the phylogeny and ontogeny of mathematical thinking. They will demonstrate this understanding by scoring at least 50% on tests given at the beginning of the seminar on previous topics and on homework assignments.	
Brief outline of the course: Prehistory, ontogeny and phylogeny. Mathematics in ancient cultures: Egypt, Mesopotamia, China, India. Mathematics in ancient Greece: Origins of Greek natural philosophy and mathematics. The discovery of incommensurability and its consequences (Pythagoras and his school). Classical problems of Greek mathematics. Problems with infinity (Zeno). Eudoxus' method. Plato, Aristotle, Euclid and his Foundations. Archimedes of Syracuse, Eratosthenes, Apollónios, Claudios Ptolemy, Diophantos. Arabic mathematics and its relation to medieval European mathematics. The origins of modern mathematics. The search for the roots of polynomial equations. The origins of analytic geometry. Probability. Infinitesimal calculus. Number theory. Non-Euclidean geometry. The origin of set theory. Development of mathematical symbolism.	

Selected topics in school mathematics from the perspective of the history of mathematics.					
Recommended literature: Burton, D. M.: The History of Mathematics: An Introduction. McGraw–Hill, 2007. Devlin, K.: Jazyk matematiky. Dokořán, 2002. (in czech) Čižmár, J . Dejiny matematiky (Od najstarších čias po takmer súčasnosť) Perfekt, 2017. (in slovak) Mareš , M . Příběhy matematiky. Pistorius, 2011. (in czech)					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 125					
A	B	C	D	E	FX
72.0	12.0	8.8	3.2	3.2	0.8
Provides: doc. RNDr. Ingrid Semanišínová, PhD.					
Date of last modification: 31.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ SMK/17	Course name: Seminar to mathematical clubs
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 6.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Conditions for continuous evaluation: <ol style="list-style-type: none"> 1. Participation in teaching in accordance with the study rules and instructions of the teacher. 2. Activity. 3. Homework and written tests. 4. Seminar work and its presentation at the seminar - plan the selected topic for one math circle Conditions for successful completion of the course: <ol style="list-style-type: none"> 1. Participation in teaching in accordance with the study regulations and according to the instructions of the teacher; 2. Credits will be awarded to a student who scores at least 50% on homework assignments, at least 50% on written tests, and at least 50% on a seminar work. A grade of A requires at least 90%, a grade of B requires at least 80%, a grade of C requires at least 70%, a grade of D requires at least 60%, and a grade of E requires at least 50%. 	
Learning outcomes: While solving homework, the student will become familiar with different types of problems from mathematical competitions and demonstrate the ability to solve them with the mathematical apparatus of the student for whom the problem is intended. While solving problems in written tests, the student will gain proficiency in solving problems from mathematical competitions such as Pythagorean and Mathematical Kangaroo. The student will demonstrate in the seminar work that he/she can prepare the content of a mathematics circle that are motivating for his/her students.	
Brief outline of the course: The content is focuses on solving problems from mathematical competitions, and on familiarization with activities that will be motivating and fun for pupils and will develop their mathematical thinking Students will also learn about the structure of mathematical competitions for middle and high school students and will be theoretically prepared for guiding mathematics circle. The seminars focus on the following topics: Number theory. Equations, inequalities, inequalities.	

Word problems. Planimetry. Stereometry. Combinatorics. Dirichlet principle. Combinatorial geometry. Probability. Mathematical games.					
Recommended literature: Acheson, D.: 1089 a další parádní čísla, Dokořán, 2006. (in czech) Brožury z edície Škola mladých matematikov. (in slovak) Séria brožúr: XY. ročník matematickej olympiády. (in slovak) Ziegler, G.M.: Matematika Vám to spočítá, Universum, Praha, 2011. (in czech) Zhouf, J. a kol.: Matematické příběhy z korespondenčních seminářů, Prometheus, Praha, 2006. (in czech)					
Course language: Slovak					
Notes:					
Course assessment Total number of assessed students: 133					
A	B	C	D	E	FX
57.14	20.3	12.03	7.52	3.01	0.0
Provides: doc. RNDr. Ingrid Semanišinová, PhD.					
Date of last modification: 18.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPO/ SPKVV/15	Course name: Social and Political Context of Education
Course type, scope and the method: Course type: Lecture Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 4., 6.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Evaluation of the developed assignment. A ... 100,00% - 91,00% B ... 90,99% - 81,00% C ... 80,99% - 71,00% D ... 70,99% - 61,00% E ... 60,99% - 51,00% FX ... 50,99% and less	
Learning outcomes: The aim and purpose of teaching the subject is to impart knowledge and promote reflection on the issues of education and training in the context of social and political change. Development of knowledge: the student will be able to know the current theoretical background related to the process of education and training in a modern democratic society. The student will be able to navigate the social and political space - politically, legally, socially and culturally. He/she will be able to look for alternatives and solutions to dysfunctions, while at the same time exploiting opportunities and ways to implement them.	
Brief outline of the course: The status, role and functions of education in human life and society. The political, social and economic objectives of education. Education, learning and social change in the context of globalisation. Macrosocial determinants of education. Current roles of education and training in modern performance and democratic society.	
Recommended literature: Domestic and foreign journal literature Kudláčová, B.(2007) Človek a výchova v dejinách európskeho myslenia. Trnava: PdF TU Zeus Leonardo (2010) Handbook of Cultural Politics and Education. Rotterdam, The Netherlands.	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 157					
A	B	C	D	E	FX
60.51	21.02	11.46	4.46	1.27	1.27
Provides: Mgr. Ján Ruman, PhD.					
Date of last modification: 13.04.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/SWI1a/15	Course name: Software engineering
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisites: ÚINF/DBS1a/15	
Conditions for course completion: The evaluation will be given on the basis of the proper fulfilment of the partial tasks of solving the (group) project during the semester. The minimum prerequisite for passing the subject is obtaining 50% of the total possible number of points. The sub-probation conditions for evaluation are published in the AIS.	
Learning outcomes: By completing the subject, the student: <ul style="list-style-type: none"> - acquires basic knowledge of the principles and methods of software engineering, - get familiar with the individual stages of the software development life cycle, - familiarizes himself with the modeling of software systems and acquires basic knowledge from the use of relevant SW tools, - will gain basic experience in working in a team and with project management and presentation. 	
Brief outline of the course: <ol style="list-style-type: none"> 1. Introduction to software engineering. 2. Software processes 3. Selected support tools for managing software processes. 4. Requirements engineering. 5. Agile methods. 6. Modeling of systems. 7. Implementation of software systems. 8. Architectures of software systems. 9. Testing. 10. Evolution of systems. 11. Case studies of software systems. 	
Recommended literature: <ol style="list-style-type: none"> 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2015. 	
Course language:	

Slovak or English					
Notes: Content prerequisites: Database systems, OOP					
Course assessment Total number of assessed students: 346					
A	B	C	D	E	FX
20.23	24.57	19.36	16.47	17.92	1.45
Provides: RNDr. Dávid Varga, prof. RNDr. Gabriel Semanišin, PhD.					
Date of last modification: 25.07.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KGER/OJPV1/07	Course name: Specialised German Language - Natural Sciences 1
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 4.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Active participation in class and completed homework assignments. Students are allowed to miss 2 classes at the most (2x90 min.). 1 control tests during the semester and written assignments. Final grade will be calculated as follows: A 93-100 %, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64 % and less.	
Learning outcomes: The development of students' language skills - reading, writing, listening, speaking, improvement of their linguistic competence - students acquire knowledge of selected phonological, lexical and syntactic aspects, development of pragmatic competence - students can effectively use the language for a given purpose, with focus on Academic English and English for specific/professional purposes - Natural Science , level B1.	
Brief outline of the course:	
Recommended literature: Duden Basiswissen Schule. Abitur: Enthält die Bände Mathematik, Physik, Chemie, Biologie, Geographie, Geschichte. (2007). ISBN: 978-3411002511. Zettl, E. et al.: Aus moderner Technik und Naturwissenschaft. Ismaning: Hueber, 2003. Reiss, K.: Basiswissen Zahlentheorie: Eine Einführung in Zahlen und Zahlbereiche (Mathematik für das Lehramt), Springer, 2007. ISBN: 978-3540453772. Meyer, L., Schmidt, G.- D.: Basiswissen Ausbildung: Physik. Bildungsverlag EINS, 2008. ISBN: 978-3427799337. Duden. Schülerduden Biologie: Das Fachlexikon von A-Z. Bibliographisches Institut Berlin, 2009. ISBN: 978-3411054275. Mortimer, Ch. E., Müller, U., Beck, J.: Chemie: Das Basiswissen der Chemie. Stuttgart: Thieme, 2014. ISBN: 978-313484311 Deutsch perfekt, GEO, MaxPlanck Forschung a iné printové a elektronické médiá	
Course language: German	
Notes:	

Course assessment					
Total number of assessed students: 147					
A	B	C	D	E	FX
24.49	23.13	23.81	20.41	7.48	0.68
Provides: Mgr. Blanka Jenčíková					
Date of last modification: 09.02.2023					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVa/11	Course name: Sports Activities I.
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: 1.	
Course level: I., I.II., II.	
Prerequisites:	
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

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVb/11	Course name: Sports Activities II.
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: I., I.II., II.	
Prerequisites:	
Conditions for course completion: active participation in classes - min. 80%.	
Learning outcomes: Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.	
Brief outline of the course: Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.	
Recommended literature: 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: 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

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVc/11	Course name: Sports Activities III.
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: I., I.II., II.	
Prerequisites:	
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: 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: BENEC, 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.	

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 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

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVd/11	Course name: Sports Activities IV.
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 4.	
Course level: I., I.II., II.	
Prerequisites:	
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: 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:Trénink 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

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/SXM1/15	Course name: Structure formats and representation of data
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Evaluation of partial exercises. Evaluation of multiple assignments corresponding to learning blocks. Final written test.	
Learning outcomes: Become acknowledged with theoretical concepts and methodologies with structured and semistructured data. Acquire programming skills with implementations of these concepts.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Representation of semi-structured data in XML, valid and well-formed XML document. 2. XML parsers: DOM, 3. SAX parser. 4 StAX parser. 5. Java API of XML parsers. 7. Schemas for XML documents: DTD, XML Schema. 8. Addressing in XML: XPath. 9. Transformations of XML documents: XSLT. 10. Other formats for semistructured data: JSON, YAML. 11. API for data binding in Java: Jackson (JSON), SnakeYAML (YAML), JAXB (XML). 	
Recommended literature: <ol style="list-style-type: none"> 1. Eliotte "Rusty" Harold. XML Bible, Gold Edition. Wiley, 2001. ISBN 978-0764548192. 2. Grigoris Antoniou, Frank Van Harmelen. A Semantic Web Primer, Second Edition. MIT Press, 2008. ISBN 978-0262012423. 3. Michael Kay. XSLT 2.0 Programmer's Reference, 3rd Edition. Wrox, 2004. ISBN: 978-076456909. 	
Course language: Slovak or English	
Notes:	

Course assessment					
Total number of assessed students: 90					
A	B	C	D	E	FX
35.56	22.22	21.11	11.11	8.89	1.11
Provides: Mgr. Alexander Szabari, PhD., RNDr. Zoltán Szoplák					
Date of last modification: 23.11.2021					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚMV/ SVK/10	Course name: Students scientific conference
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisites:	
Conditions for course completion:	
Learning outcomes: Individual scientific work of students. Publishing of obtained results in a written form and as a public presentation.	
Brief outline of the course:	
Recommended literature: With respect to the research problematics (article in journals, books).	
Course language: Slovak or English	
Notes:	
Course assessment Total number of assessed students: 17	
abs	n
100.0	0.0
Provides:	
Date of last modification: 01.12.2021	
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ DGS/21	Course name: Students' Digital Literacy
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: 1.	
Course level: I.	
Prerequisites:	
Conditions for course completion: Summary evaluation based on ongoing assessment: 1. Practical ongoing assignments and their defense (at least 50% needed) 3. Active participation during face-to-face contact learning in classical or virtual classroom (3 absences allowed) and during online learning (no absence, uploading all individual ongoing assignments)	
Learning outcomes: The student should obtain and know to apply basic knowledge and skills in working with current digital technologies (mobile phone, tablet, laptop, web technologies): 1. according to the current European framework for the Digital competence DigComp and ECDL 2. for better and more effective learning, work and active life in higher education, later lifelong learning and further career prospects.	
Brief outline of the course: 01.-02. Basic digital skills, DigComp framework, ECDL - modern web browser and its personalization - security, privacy, responsible use of DT 03.-05. Search, collection and evaluation of digital content - scanning, audio recording and speech resolution, optical resolution (OCR) - digital notebooks (Google keep, Evernote, Onenote) - evaluation of digital resources (Google forms and sections) 06.-08. Editing and creating digital content - cloud and interactive documents (text and spreadsheet editors - Google, Microsoft, Jupyter) - work with pdf documents, e-books and videos (Kami, Google books, Screencasting) 09. - 10. Organization, protection and sharing of digital content - modern LMS and cloud storage (Google Classroom, Microsoft team, Google Drive, Dropbox) - time management (Google Calendar) 11.-13. Digital communication and cooperation	

- collaborative interactive whiteboards (Jamboard, Whiteboard) - online presentations and online meetings (Google presentations, Powerpoint, Google meet, Microsoft teams)					
Recommended literature: 1. Carretero Gomez, S., Vuorikari, R. and Punie, Y., DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use, Luxembourg, 2017, ISBN 978-92-79-68006-9, https://www.ecdl.sk/ 2. Bruff, D. (2019). Intentional Tech: Principles to Guide the Use of Educational Technology in College Teaching (1st edition). Morgantown: West Virginia University Press. 3. Baker, Y. (2020). Microsoft Teams for Education. Amazon Digital Services. 4. Miller, H. (2021). Google Classroom + Google Apps: 2021 Edition. Brentford: Orion Edition Limited.					
Course language: slovak					
Notes:					
Course assessment Total number of assessed students: 81					
A	B	C	D	E	FX
45.68	3.7	7.41	0.0	43.21	0.0
Provides: doc. RNDr. Jozef Hanč, PhD.					
Date of last modification: 26.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ LKSp/13	Course name: Summer Course-Rafting of TISA River
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.	
Prerequisites:	
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: carrying a canoe, entering and exiting a canoe, righting a canoe, paddling	
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: - implement the acquired knowledge in different situations and practice, - implement basic skills to manipulate a canoe on a waterway, - determine the right spot for camping, - prepare a suitable material and equipment for camping.	
Brief outline of the course: Brief outline of the course: 1. Assessment of difficulty of waterways 2. Safety rules for rafting 3. Setting up a crew 4. Practical skills training using an empty canoe 5. Canoe lifting and carrying 6. Putting the canoe in the water without a shore contact 7. Getting in the canoe 8. Exiting the canoe 9. Taking the canoe out of the water 10. Steering a) The pry stroke (on fast waterways) b) The draw stroke	

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	
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ SLO1a/15	Course name: Symbolic logic
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 6.	
Course level: I., II.	
Prerequisites:	
Conditions for course completion: Knowledge of studied notions will be evaluated.	
Learning outcomes: To understand basic notions of symbolic logic.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Mathematical symbols 2. Expressions 3. Interpretation 4. Value of expression 5. Standard interpretation 6. Theories and their models 7. Substitutions 8. Allowed substitutions 9. Proving system 10. Correctness of basic proving system 11. Work with logical connections 12. Work with quantifiers 	
Recommended literature: <ol style="list-style-type: none"> 1. Krajčí S., https://ics.upjs.sk/~krajci/skola/vyucba/ucebneTexty/logika-stromy.pdf 2. Goldstern M., Judah H.: The Incompleteness Phenomenon, A New Course in Mathematical Logic, A K Peters, Wellesley, Massachusetts, 1995 	
Course language: Slovak	
Notes:	

Course assessment					
Total number of assessed students: 429					
A	B	C	D	E	FX
26.81	11.19	12.35	10.72	26.11	12.82
Provides: prof. RNDr. Stanislav Krajčí, PhD.					
Date of last modification: 04.01.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KPE/TVE/08		Course name: Theory of Education			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of ECTS credits: 2					
Recommended semester/trimester of the course: 4., 6.					
Course level: I.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Notes:					
Course assessment Total number of assessed students: 631					
A	B	C	D	E	FX
43.11	31.22	16.8	5.07	1.74	2.06
Provides: Mgr. Katarína Petříková, PhD.					
Date of last modification: 20.06.2022					
Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚINF/ TYS1/15	Course name: Typographical systems
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 6.	
Course level: I., N	
Prerequisites:	
Conditions for course completion: Satisfiable ability to correct mainly mathematical typesetting.	
Learning outcomes: To provide the basic information on principles for typesetting of documents containing mathematical formulas.	
Brief outline of the course: <ol style="list-style-type: none"> 1. Principles for typesetting of documents containing mathematical formulas. 2. Typesetting of a plain text, special text symbols, using of text fonts. 3. TeX macros. 4. Enumerations in text and footnote command. Parameter setting determining the appearance of the pages. 5. Typesetting of mathematical formulas in text and displays, aligning formulas. 6. Making tables and pictures. 7. Definitions, theorems, and proofs in a mathematical document. 8. Contents, bibliography, sections in a document. 9. Pictures. 10.-12. Project. 	
Recommended literature: <ol style="list-style-type: none"> 1. D. E. Knuth, The TeXbook, Computers and Typesetting, Addison-Wesley, Reading, Massachusetts, 1986. 2. M. Doob, Jemný úvod do TeXu, CSTUG, 1990; český překlad z "A Gentle Introduction to TeX" (text voľne prístupný v CTAN archíve). 3. O. Ulrych, AMS-TeX za 59 minút, (verzia 1.0), Praha, 1989. 4. J. Chlebíková, AMS-TeX (verzia 2.0), Bratislava, 1992. 5. M. Spivak, The Joy of TeX, Amer. Math. Soc., 1986. 6. L. Lamport, LaTeX: A Document Preparation System, Addison-Wesley, Massachusetts, 1986. 7. L. Lamport, MakeIndex: An index processor for LaTeX, 17 February 1987. 8. J. Rybička, LaTeX pro začátečníky, Konvoj, Brno, 1995. 9. H. Partl, E. Schlegl, I. Hyna, P. Sýkora, LaTeX – Stručný popis. 	

10. T. Oetiker, H. Partl, I. Hyna, E. Schlegl, M. Kocer, P. Sýkora, Ne příliš stručný úvod do systému LaTeX2e (neboli LaTeX2e v 73 minutách).
11. M. Goossens, F. Mittelbach, and A. Samarin, The LaTeX Companion, Addison-Wesley, Reading, Massachusetts, 1994. Kapitola 8 je volně přístupná v TeX archívech (ch8.pdf). 4
12. G. Grätzer, Math into LaTeX, 3rd edition, Birkhäuser, Boston, 2000.

Course language:

Slovak.

Notes:

Course assessment

Total number of assessed students: 254

A	B	C	D	E	FX
48.43	17.72	20.08	6.3	6.69	0.79

Provides: prof. RNDr. Stanislav Krajčí, PhD.

Date of last modification: 08.01.2022

Approved: doc. RNDr. Stanislav Lukáč, PhD., prof. RNDr. Stanislav Krajčí, PhD.