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University: P. J.	Šafárik Univers	sity in Košice						
Faculty: Faculty	of Science							
Course ID: CJP PFAJAKA/07	Course ID: CJP/     Course name: Academic English       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 ECT	<b>FS credits:</b> 2							
Recommended	semester/trime	ster of the cours	e:					
Course level: I.,	II., N							
Prerequisities:								
Combined method of teaching (classroom/distance) Active classroom participation, assignments handed in on time, 2 absences tolerated 1 test (10th week), no retake. (in classroom, in case of distance learning due to worsened epidemiological situation – online) Presentation on chosen topic (in case of distance learning - online thorugh MS Teams) Final evaluation- average assessment of test (40%), essay (30%) and presentation (30%). Grading scale: A 93-100%, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64% and less								
Learning outco	mes:							
Brief outline of the course:								
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: 380								
А	В	С	D	Е	FX			
33.68	22.11	15.53	10.0	6.58	12.11			
Provides: Mgr.	Viktória Mária S	Slovenská						
Date of last mo	Date of last modification: 17.09.2020							

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

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

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

Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 6.

Course level: I.

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

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

At least 50 % of the marks in the continuous assessment

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

or

The final project - 100%

#### Learning outcomes:

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

## Brief outline of the course:

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

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

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

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

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

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

7. Object-oriented programming 2. Comparison and differences with Java. Multiple inheritance.

8. Method overloading. Static methods, abstract classes, data class.

9. Decorators, memoization, modules, packages.

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

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

12. Graphical program design and implementation.

## **Recommended literature:**

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

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

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

## **Course language:**

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

Notes:

Cou	ırse	asses	sment		
			-		

Total number of assessed students: 35

А	В	С	D	Е	FX
8.57	14.29	25.71	25.71	11.43	14.29

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

Date of last modification: 30.08.2021

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	of Science						
Course ID: ÚMV/ Course name: Algebra II for informaticians and physicists ALG3b/10							
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 ECT	<b>FS credits:</b> 7						
Recommended	semester/trimes	ster of the course	•				
Course level: I.,	II.						
Prerequisities:	ÚMV/ALGa/10						
<b>Conditions for o</b> Exam	course completi	on:					
<b>Learning outco</b> To provide deep	mes: er knowledge or	n vector spaces, li	near transforma	ations and Euclide	an spaces.		
<b>Brief outline of the course:</b> 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.							
A. F. Beardon: A G. Birkhoff, S. I	Algebra and Geo Mac Lane: A Su	metry, Cambridgo rvey of Modern A	e University Pre llgebra, New Yo	ess, 2005 ork 1965			
<b>Course languag</b> Slovak	je:						
Notes:							
Course assessment Total number of assessed students: 290							
А	В	С	D	Е	FX		
15.52	10.69	12.76	18.62	31.72	10.69		
<b>Provides:</b> doc. F Janičková, PhD.	RNDr. Roman So	oták, PhD., RNDr.	Mária Maceko	ová, PhD., RNDr. 1	Lucia		
Date of last mod	dification: 26.03	3.2020					
Approved:							
I							

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

Course level: I.

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

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

Practice activities, homeworks and midterm exam.

Final examination consisting of practice and theoretical test.

#### Learning outcomes:

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

## Brief outline of the course:

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

union & find, trie.

#### **Recommended literature:**

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

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

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

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

#### **Course language:**

Slovak or english

#### Notes:

Content prerequisities:

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

- mathematics:

-- computing with polynomials, logarithmic and exponential functions

computing limits of sequences, L'Hospital rule							
Course assessment Total number of assessed students: 146							
A B C D E FX							
13.01	5.48	17.12	24.66	36.99	2.74		
Provides: prof. RNDr. Gabriel Semanišin, PhD., RNDr. Rastislav Krivoš-Belluš, PhD.							
Date of last modification: 25.02.2021							
Approved:							

University: P. J.	Šafárik Univers	ity in Košice						
Faculty: Faculty	of Science							
Course ID: KPE ALP/06	Course ID: KPE/       Course name: Alternative Education         ALP/06       Course name: Alternative Education							
Course type, sc Course type: F Recommended Per week: 2 Pe Course method	ope and the met Practice I course-load (h er study period: d: present	thod: ours): 28						
Number of ECT	<b>FS credits:</b> 2							
Recommended	semester/trimes	ster of the cours	<b>e:</b> 4.					
Course level: I.								
Prerequisities:								
Conditions for a	course completi	on:						
Learning outco	mes:							
Brief outline of	the course:							
Recommended	literature:							
Course languag	je:							
Notes:								
Course assessm Total number of	ent assessed studen	ts: 242						
Α	В	С	D	Е	FX			
62.81	31.4	3.31	0.83	0.41	1.24			
Provides: Mgr. 1	Katarína Petríko	vá, PhD.	<u>I</u>		<u></u>			
Date of last mo	dification: 14.06	5.2021						
Approved:								

Faculty: Faculty of Science

Course ID: ÚCHV/ Course name: Analytical Chemistry ANCHU/03

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:** 6

Recommended semester/trimester of the course: 3.

Course level: I.

**Prerequisities:** ÚCHV/VCHU/14 and leboÚCHV/VCHU/15 and leboÚCHV/VCHU/10 and leboÚCHV/VACH/10

**Conditions for course completion:** 

3x test of analytical calculations.

Examination

#### Learning outcomes:

Survey of basic principles and tasks of analytical chemistry and applications of analytical methods in research and practice.

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

Subject and role of analytical chemistry. General principles and procedures - sampling, sample pretreatment. Preparation of solutions. Evaluation of the results.

Classification of analytical reactions. Qualitative analysis of cations and anions. Basic principles of organic analysis.

Methods of quantitative analysis. General principles of gravimetry. Volumetric analysis.

Instrumental methods of analytical chemistry (basic principles, instrumentaion and applications) - electroanalytical, optical and separation methods.

#### **Recommended literature:**

Skoog D.A.: Principles of Instrumental Analysis. Saunders Col. Publishing, New York 1985. D.Harvey: Modern Analytical Chemistry. McGraw Hill, Boston, 2000.

#### **Course language:**

Notes:

# Course assessment

Total number of assessed students: 708

А	В	С	D	Е	FX		
17.23	19.35	25.14	25.0	9.6	3.67		
Provides: doc. RNDr. Taťána Gondová, CSc.							
Date of last modification: 03.05.2015							

University: P. J. Šafán	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> ÚINF/ APS1/15	Course name: Applied probability and statistics
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 2 Per Course method: pre	nd the method: e / Practice rse-load (hours): study period: 28 / 28 sent
Number of ECTS cro	edits: 5
Recommended seme	ster/trimester of the course: 5.
Course level: I., II.	
<b>Prerequisities:</b> ÚMV MAN2c/10 and leboÚ	/FRPb/19 and leboÚMV/MTIb/21 and leboÚMV/MZIb/10 and leboÚMV/ MV/MTFb/15
<b>Conditions for cours</b> Written works during Written and oral exan	e completion: the semester, project. n.
Learning outcomes: Acquired basic conce software.	pts, techniques and models of probability theory, statistics and corresponding
<b>Brief outline of the c</b> 1) Random event, pro 2) Probability distribu 3) Characteristics of p 4) Basic discrete and 5) The law of large nu 6) Random sample. In 7) Quantiles, basic dis 8) Theory of estimate 9) Tests on distribution 10) Modeling of depent 11) Polynomial regresung 12) Pseudorandom quant	burse: bability and conditional probability. ation laws. bosition, variability and dependence. continuous distributions. ambers and the central limit theorem. initial analytical and geometric analysis of data. stributions and basic theorem of mathematical statistics. s, method of moments and maximum likelihood. Hypothesis testing. on parameters and goodness-of-fit tests. endencies and noise. Least squares method and smoothing. ssion models. mantities and Monte Carlo methods.
Recommended litera - Cs. Török: Úvod do - M.R.Spiegel, J.J.Scl - J. Maindonald, W.J. Approach, CAMBRII	ture: teórie pravdepodobnosti a matematickej štatistiky, Košice, 1992 niller, R.A.Srinivasan, Probability and Statistics, McGraw Hill, 2009 Braun, Data Analysis and Graphics Using R – an Example-Based DGE UNIVERSITY PRESS, 2010

Slovak or english

Notes:

Face to face or online teaching.

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

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

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

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

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

Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

**Conditions for course completion:** 

Oral examination.

#### Learning outcomes:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## **Recommended literature:**

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

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

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

# **Course language:**

## Notes:

# Course assessment

Total number of assessed students: 850

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

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

Date of last modification: 17.08.2021

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚINF/ C AFJ1b/15	Course name: Automata and formal languages				
Course type, scope and Course type: Lecture Recommended course Per week: 2 / 1 Per st Course method: prese	d the method: / Practice e-load (hours): udy period: 28 / 14 ent				
Number of ECTS cred	lits: 5				
Recommended semester	er/trimester of the course: 5.				
Course level: I., II.					
Prerequisities: ÚINF/A	AFJ1a/15				
<b>Conditions for course</b> Test and oral examinati	completion: on.				
<b>Learning outcomes:</b> To provide theoretical b knowledge in theory of	ackground for studying computer science in general, by giving the necessary `automata.				
<ul> <li>1: Pushdown automata</li> <li>by empty pushdown</li> <li>2: Deterministic pushdo</li> <li>3: Context-free gramma</li> <li>of type A→epsilon and</li> <li>4: Relation between co grammar to a pushdown</li> <li>5: Pumping lemma II: a</li> <li>7: Closure properties of</li> <li>8: Closure properties of</li> <li>9: Pushdown automata</li> <li>practice</li> <li>10: Context-sensitive</li> <li>Turing machine (LBA)</li> <li>a context-sensitive gram</li> <li>11: Closure properties of</li> <li>12: Recursively enund</li> <li>deterministic Turing magrammar, transforming</li> <li>properties</li> <li>13: Universal Turing mail</li> <li>14: Algorithmically und</li> </ul>	<ul> <li>c definition of a pushdown automaton, accepting by final states, accepting own automata: examples of application in practice ars: basic definition, leftmost derivation, derivation tree, elimination of rules A→B, Chomsky normal form ontext-free grammars and pushdown automata: transforming context-free nautomaton, transforming pushdown automaton to a context-free grammar tatement of the lemma and its proof applications of the lemma f context-free languages a producing an output: basic definitions and properties, applications in languages: context-sensitive grammar, nondeterministic linear-bounded , transforming context-sensitive grammar to an LBA, transforming LBA to nmar of context-sensitive languages merable languages: phrase-structure grammar, nondeterministic and achine, transforming nondeterministic Turing machine to a phrase-structure grammar to a deterministic Turing machine, closure achine decidable problems of the formal language theory</li> </ul>				

# **Recommended literature:**

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

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

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

# **Course language:**

Notes:

## **Course assessment**

Total number of assessed students: 567

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

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

Date of last modification: 17.08.2021

University: P. J. Šafár	ik University in Košice					
Faculty: Faculty of Science						
<b>Course ID:</b> ÚCHV/ BKP/14	D: ÚCHV/ 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 cre	edits: 2					
Recommended semes	ster/trimester of the cour	se: 5				
Course level: I.						
Prerequisities:						
<b>Conditions for course</b> Submission of the bac supervisor.	e <b>completion:</b> chelor project, the defense	of the project and acceptance of its content by the				
Learning outcomes:						
Brief outline of the co	ourse:					
Recommended litera 1. Scientific papers re 2. Directive No. 1/201	<b>ture:</b> lated to the topic of the ba 11 of the rector UPJS in K	chelor project. ošice.				
Course language:						
Notes:						
<b>Course assessment</b> Total number of asses	sed students: 60					
	abs	n				
100.0 0.0						
Provides:						
Date of last modification: 03.05.2015						
Approved:	Approved:					

University: P. J. Šafárik University in Košice					
Faculty: Faculty of S	Faculty: Faculty of Science				
<b>Course ID:</b> ÚINF/ BKP/14	Course ID: ÚINF/ Course name: Bachelor Project BKP/14				
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present					
Number of ECTS cr	edits: 2				
Recommended seme	ster/trimester of the cours	e: 5.			
Course level: I.					
Prerequisities:					
Conditions for cours	e completion:				
Learning outcomes:					
Brief outline of the c	ourse:				
Recommended litera	iture:				
Course language:					
Notes:					
Course assessment Total number of assessed students: 5					
abs n					
100.0 0.0					
Provides:					
Date of last modification:					
Approved:					

University: P. J	. Šafárik Univers	ity in Košice					
Faculty: Facult	Faculty: Faculty of Science						
<b>Course ID:</b> ÚIN BPO/14	ID: ÚINF/ Course name: Bachelor Thesis and its Defence						
Course type, sc Course type: Recommended Per week: Per Course metho	ope and the met d course-load (h r study period: d: present	thod: ours):					
Number of EC	TS credits: 4						
Recommended	semester/trimes	ster of the cours	e:				
<b>Course level:</b> I.							
Prerequisities:							
Conditions for	course completi	on:					
Learning outco	omes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	ge:						
Notes:							
Course assessment Total number of assessed students: 112							
А	В	С	D	Е	FX		
47.32	47.32 27.68 11.61 8.04 5.36 0.0						
Provides:							
Date of last modification: 09.01.2019							
Approved:							

University: P. J.	Šafárik Univer	sity in Košice			
Faculty: Faculty	of Science				
<b>Course ID:</b> ÚCH BPO/14	IV/ Course n	ame: Bachelor T	hesis and its Def	ence	
Course type, sco Course type: Recommended Per week: Per Course method	ope and the me course-load (I study period: I: present	thod: nours):			
Number of ECT	S credits: 4				
Recommended s	semester/trime	ster of the cours	e:		
Course level: I.					
Prerequisities:					
Conditions for c	ourse complet	ion:			
Learning outcom	nes:				
Brief outline of Oral presentation the state examin	the course: n of the thesis ation board.	results. Answerin	g questions of tl	ne thesis oponent	t or members of
Recommended I	literature:				
<b>Course languag</b> slovak	e:				
Notes:					
Course assessme Total number of	ent assessed studer	nts: 213			
A	В	C	D	Е	FX
87.79	8.45	1.88	1.88	0.0	0.0
Provides:		•	L		1
Date of last mod	lification: 03.0	5.2015			
Approved:					

University: P. J. Š	Safárik University in Košice
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Faculty: Faculty of Science

Course ID: ÚCHV/	<b>Course name:</b> Basis of Mineralogy
MIN1/14	

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: 4.

Course level: I.

**Prerequisities:** ÚCHV/VCH/10 and leboÚCHV/VCHU/10 and leboÚCHV/ZAC2/10 and leboÚCHV/VACH/10 and leboÚCHV/CHG/09 and leboÚCHV/ZCF/03 and leboÚCHV/VCHU/15

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

Verification of theoretical knowledge and recognizing minerals.

Semester project, practical test from recognizing of minerals, written examination.

## Learning outcomes:

To recognize the beauty of nature and to obtain basic knowledge from mineralogy. To familiarize students with properties of usual minerals and to recognize these minerals.

## Brief outline of the course:

Basic terms and definitions, origin of minerals in nature. Basis of morphological and structural crystallography: characteristic properties of crystals, crystallographic laws, crystal structure, unit cells and their parameters, crystallographic systems with examples of minerals. Crystallochemistry: types of bonds and structures and their effect on the properties of minerals. Physical properties of minerals and their utilize in minerals classification. Basis of genetic and systematic mineralogy. Structure of silicates.

#### **Recommended literature:**

M. Košuth: Mineralógia. Elfa, s.r.o. Košice, 2001 V. Radzo: Mineralógia, Alfa Bratislava, 1987.

#### **Course language:**

Slovak

Notes:

#### Course assessment

Total number of assessed students: 102

А	В	С	D	Е	FX
81.37	15.69	0.98	0.98	0.0	0.98
Provides: doc. RNDr. Ivan Potočňák, PhD.					

**Date of last modification:** 03.05.2021

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

Course ID: ÚCHV/	Course name: Biochemistry
BCHU/03	

Course type, scope and the method: Course type: Lecture Recommended course-load (hours): Per week: 3 Per study period: 42 Course method: present

Number of ECTS credits: 5

**Recommended semester/trimester of the course:** 5.

Course level: I.

**Prerequisities:** ÚCHV/VCHU/10 and leboÚCHV/VCHU/15 and leboÚCHV/VACH/10 and leboÚCHV/VCHU/14

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

test + oral examination

#### Learning outcomes:

The aim of biochemistry teaching is to acquire knowledge in the field of living organisms on the basis of their molecular structure and metabolism.

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

- 1. Protein Structure and Function, Exploring proteins
- 2. DNA and RNA and the Flow of Genetic Information, Exploring genes
- 3. Enzymes: Basic Concepts and Kinetics, Catalytic Strategies and Regulatory Strategies
- 4. Carbohydrates (Monosaccharides, Disaccharides, Polysaccharides Functions and Properties)
- 5. Lipids and Cells Membranes, Membrane Channels and Pumps
- 6. Metabolis: Basic Concepts and Design, Signal-Transduction Pathways
- 7. Glycolysis and Gluconeogenesis, Glycogen Metabolism
- 8. The Citric Acid Cycle and Glyoxylate Cycle
- 9. Oxidative Phosphorylation, The Light Reactions of Photosyntesis
- 10. The Calvine Cycle and the Pentose Phosphate Pathway
- 11. Fatty Acids Metabolism, Urea Cycle
- 12. DNA Replication, Transcription (RNA Synthesis)
- 13. Protein Synthesis & Degradation, the Integration of Metabolism

#### **Recommended literature:**

Škárka: Biochémia. Alfa, 1992

Voet a Voetová: Biochemie. Victoria Publishing, Praha, 1994

Stryer, L.: Biochemistry, W.H. Freeman and Company, New York, 1988

## **Course language:**

Notes:

Course assessn Total number o	nent f assessed studen	ts: 1221			
А	В	С	D	Е	FX
19.66	16.87	20.88	20.88	19.08	2.62
Provides: doc. RNDr. Erik Sedlák, DrSc., RNDr. Nataša Tomášková, PhD.					
Date of last mo	dification: 03.05	5.2015			
Approved:					

University: P. J. S	Šafárik Univers	ity in Košice					
Faculty: Faculty	of Science						
Course ID: ÚCH PBCHU/15	HV/ Course name: Biochemistry Practical						
Course type, sco Course type: Pr Recommended Per week: 4 Per Course method	pe and the met actice course-load (h r study period: : present	thod: ours): 56					
Number of ECT	S credits: 4						
Recommended s	emester/trimes	ster of the cours	<b>e:</b> 6.				
Course level: I.							
Prerequisities: Ú	CHV/BCHU/0	3					
<b>Conditions for c</b> Protocols + 75 %	ourse completi	on: aluation.					
Learning outcon	nes:						
The most import and proteins. Tir activity, determine effect of a substructure urease. Isolation <b>Recommended lis</b>	rtant biochemione-dependent c nation of the firate concentration and detection on iterature:	cal laboratory n ourse of enzyme rst order rate co on on initial rate f nucleic acids.	nethods. The q e-catalyzed reac nstant, calculat of reaction, de	ualitative tests for etion: determination ions of math module termination of Kn	or amino acids on of enzymatic lels (examples), n and Vmax for		
Course language							
Notes.							
Course assessme Total number of	nt assessed studen	ts: 159					
A	В	С	D	E	FX		
77.99	17.61	3.14	0.63	0.63	0.0		
<b>Provides:</b> prof. R Varhač, PhD., RN	NDr. Mária Ko IDr. Danica Sat	vžurková, CSc., F polová, PhD., RN	RNDr. Nataša To IDr. Eva Konko	omášková, PhD., F ľová, PhD.	RNDr. Rastislav		
Date of last mod	ification: 03.05	5.2015					
Approved:							

University: P. J. Šafárik University in Košice						
Faculty: Faculty of Science						
Course ID: ÚCHV/ Course name: Bioinorganic Chemistry I BAC1/04						
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.						
Prerequisities:						
Conditions for course completion: Test or seminar works examination						
Learning outcomes: The basic knowledges about biometal interactions with biomolecules, biomaterials, biominerals, biocatalysis, metals in biology and medicine, metal-based drugs, toxic metals for biosystems and metals in the environment.						
<b>Brief outline of the course:</b> Metalic and non-metalic elements and their roles in biological systems (biometals, bulk biological elements, essential trace elements). Biocoordination compounds, bioligands. Biocatalyzers. Oxygen carriers and oxygen transport proteins. Photochemical process. Catalysis and regulation processes. Calcium biominerals and biomineralization.Toxic metals. Application of knowledge of bioinorganic chemistry in pharmacy, chemotherapy (e.g. platinum complexes in cancer therapy) radiodiagnostics, mineral biotechnology, ecology and in other branches of life.						
<ul> <li>Recommended literature:</li> <li>1. Shriver D. F., Atkins P. W., Overton T. L., Rourke J.P., Weller M.T., Amstrong F.A.: Shiver &amp; Atkins. Inorganic Chemistry. Oxford University Press, Oxford 2006.</li> <li>2. Kaim W., Schwederski B.: Bioinorganic Chemistry: Inorganic Elements in the Chemistry of Life. Wiley, Chichester 1998.</li> <li>3. Wilkins P. C., Wilkins R. G.: Inorganic Chemistry in Biology. OCP, Oxford 1997.</li> </ul>						
Course language:						
Notes:						
Course assessment Total number of assessed students: 304						
A B C D E FX						
41.12 28.29 18.75 5.92 5.59 0.33						
Provides: doc. RNDr. Zuzana Vargová, Ph.D.						

**Date of last modification:** 03.05.2015

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University: P. J.	Šafár	ik Univers	ity in Košice					
Faculty: Faculty	of Sc	cience						
Course ID: ÚBE BDD/05	EV/	Course na	me: Biology of	Children and Ac	dolescents			
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 ECT	<b>S</b> cre	edits: 2						
Recommended	semes	ster/trimes	ster of the cours	<b>e:</b> 4., 6.				
<b>Course level:</b> I.								
Prerequisities:								
<b>Conditions for a</b> Written test	course	e completi	on:					
Learning outcome The aim of the development. It and adolescents	mes: subje is neco linkeo	ct is to ga cessary for d to develo	in the particular the understandir pment.	level of knowl ng of specific bio	ledge about huma logical characteri	an body and its istics of children		
Brief outline of Human ontoger circulatory, resp system. Nervour population and e	the content the content the sis. the sister of the sister	Durse: Postnatal y, gastroir em. Age sj nment.	development. Antestinal and uri pecifics of selec	age specific fea nary systems. I ted diseases and	tures of skeletal Reproductive sys I drug dependenc	l and muscalar, stem. Endocrine ce arise. Human		
Recommended Drobný I., Drob 2000 Lipková V.: Son Malá H., Kleme	literat ná M. natick nta J.:	<b>ture:</b> : Biológia ý a fyziolo : Biológia o	dieťaťa pre špec gický vývoj dieť detí a dorastu. Br	iálnych pedagóg 'at'a. Osveta Bra 'atislava, SPN, 1	gov I. a II. Bratisla tislava, 1980 989	ava, PdF UK,		
Course languag	e:							
Notes:								
Course assessm Total number of	ent `asses	sed studen	ts: 1551					
A		В	С	D	Е	FX		
32.82	2	23.08	17.15	17.15	9.28	0.52		
Provides: doc. R	NDr.	Monika K	assayová, CSc.	1	1			
Date of last mod	lificat	tion: 03.05	5.2015					
Approved:								

r								
<b>University:</b> P. J.	Šafárik Univers	sity in Košice						
Faculty: Faculty of Science								
Course ID: ÚCH CHV1/99	D: ÚCHV/ Course name: Chemical calculations							
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present								
Number of ECT	S credits: 2							
Recommended s	semester/trime	ster of the cours	e: 1.					
Course level: I.								
Prerequisities:								
<b>Conditions for c</b> Short written tes Written test.	<b>course complet</b> its.	ion:						
Learning outcome To teach studen processes and ho	<b>mes:</b> ts how to calcu ow to calculate of	ilate material bal examples concerr	ances in the sys	stems with or wi equilibrium.	thout chemical			
Brief outline of Expression of t Material bilance Material bilance with chemical p and solubility.	the course: he clear matter s for preparation s for combined p rocesses. Acid-	amount and th dissolving and n processes. Chemi Base equilibrium	e system componing of solution nixing of solution cal equations and and the pH calc	osition. Stoichion as, and for separat l material bilances culations. The sol	netric formula. ing of mixtures. s in the systems lubility product			
Recommended I Potočňák I.: Che Košice, 2006.	literature: emické výpočty	vo všeobecnej a a	anorganickej ché	mii (skriptum), P	F UPJŠ,			
Course languag	e:							
Notes:								
Course assessme Total number of	ent assessed studer	nts: 1440						
A	В	С	D	Е	FX			
22.5	19.44	24.1	20.21	12.99	0.76			
Provides: RNDr	. Martin Vavra,	PhD., doc. RNDr	. Miroslav Almá	ši, PhD.				
Date of last mod	lification: 03.03	5.2015						
Approved:								

University: P. J. Šafárik University in Košice
Faculty: Faculty of Science
Course ID: ÚCHV/ ISC1a/00Course name: Cheminformatics 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.
Prerequisities:
Conditions for course completion: seminar exercises, seminar project
Learning outcomes: Introductory course aimed at introducing students to the fundamental informatics techniques for chemistry-related disciplines. The class will cover a wide range of topics, including searching chemical information on internet, searching for patent information and work with the primary and secondary literature.
<b>Brief outline of the course:</b> Searching, retrieving and use of the informations in chemistry. Using of "paper" resources (primary journals, Chemical Abstracts, Beilstein).Searching chemical information on Internet (Scirus, ScienceDirect, Scopus, Web of Science, Medline, NIST) and e-journals.
Recommended literature: 1. R.E. Maizell: How to find Chemical Information, John Wiley, New York 1998 2. Internet resources for chemistry.
Course language: slovak language and english language
Notes:
Course assessment Total number of assessed students: 871
A B C D E FX
71.41 7.92 11.94 6.54 1.49 0.69
Provides: RNDr. Monika Tvrdoňová, PhD., doc. RNDr. Ladislav Janovec, PhD.
Date of last modification: 05.02.2020
Approved:

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: ÚC SCHM/14	HV/ Course n	Course name: Chemistry					
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.							
<b>Prerequisities:</b> (ÚCHV/VCHU/10 and leboÚCHV/VCHU/14 and leboÚCHV/VCHU/15),ÚCHV/ ACHU/03,ÚCHV/BCHU/03,ÚCHV/FCHU/10,ÚCHV/ANCHU/03,ÚCHV/OCHU/03							
Conditions for course completion:							
Learning outco	Learning outcomes:						
Brief outline of the course:							
Recommended literature:							
Course language:							
Notes:							
Course assessment Total number of assessed students: 154							
А	В	С	D	Е	FX		
27.92	32.47	23.38	10.39	5.84	0.0		
Provides:							
Date of last modification: 30.05.2016							
Approved:	Approved:						

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 a Course type: Lectur Recommended cour Per week: 2 Per stu Course method: pre	nd the method: re rse-load (hours): dy period: 28 esent			
Number of ECTS credits: 4				
Recommended semester/trimester of the course: 3., 5.				
Course level: I., II., N				
Prerequisities:				
Conditions for course completion:				
Learning outcomes:				
Brief outline of the course:				
Recommended literature:				
Course language:				
Notes:				
Course assessment Total number of assessed students: 103				
	abs	n		
94.17		5.83		
Provides: doc. JUDr. Renáta Bačárová, PhD., LL.M., prof. JUDr. Peter Vojčík, CSc.				
Date of last modification: 16.12.2020				
Approved:				

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					
Prerequisities:					
Conditions for cours Active participation is two classes at the mo Online teaching (MS 2 credit tests (presum The tests will be take classes. The presentation will	e completion: n class and completed homework assignments. Students are allowed to miss st. Teams), in case of an improved epidemiological situation = on-site teaching. ably in weeks 6/7 and 12/13) and a short oral presentation in English. en online (MS Teams) during online teaching and in class in case of on-site be sent to the course instructor as a video recording.				

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

# Learning outcomes:

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

## Brief outline of the course:

Rodina, jej formy a problémy Vyjadrovanie pocitov a dojmov Dom, bývanie a budúcnosť Formy a dialekty v anglickom jazyku Život v meste a na vidieku Kolokácie a idiomy, zaužívané slovné spojenia Prázdniny a sviatky vo svete
Životné prostre Výnimky zo slo Frázové slovesá Charakteristiky	die a ekológia ovosledu i a ich použitie neformálneho di	škurzu					
Recommended www.bbclearnin McCarthy M., C Misztal M.: The Fictumova J., C Principal, 2008. Peters S., Gráf Jones L.: Comm Alexander L.G.	literature: ngenglish.com D'Dell F.: English ematic Vocabular deccarelli J., Long T.: Time to practi nunicative Gramu : Longman Engli	i Vocabulary in U y. SPN, 1998. g T.: Angličtina, l se. Polyglot, 200 nar Practice. CU sh Grammar. Loi	Jse, Upper-Inter konverzace pro j 7. P, 1985. ngman, 1988.	mediate. CUP, 19 pokročilé. Barrist	94. er and		
<b>Course languag</b> English languag	ge: ge, B2 level accor	rding to CEFR					
Notes:							
Course assessm Total number of	ent f assessed studen	ts: 260					
А	В	С	D	Е	FX		
40.38 22.31 18.85 8.85 6.54 3.08							
Provides: Mgr. Barbara Mitríková, Mgr. Zuzana Naďová							
Date of last mo	dification: 11.02	.2021					
Approved:							

University: P. J. Ša	afárik Univers	sity in Košice						
Faculty: Faculty o	f Science							
Course ID: CJP/ PFAJGA/07Course name: Communicative Grammar in English								
Course type, scop Course type: Prac Recommended co Per week: 2 Per s Course method:	e and the met ctice ourse-load (h study period: combined, pre	thod: ours): 28 esent						
Number of ECTS	credits: 2							
Recommended ser	mester/trimes	ster of the cours	e:					
Course level: I., II	., N							
Prerequisities:								
Conditions for con Active classroom week), no retake. 86-92%, C 79-85%	participation Final evaluat 6, D 72-78%,	on: (max. 2x90 min. ion- average ass E 65-71%, FX 64	absences tolera essment of tests 4% and less.	ated). 2 test (5th/o s. Grading scale:	6th and 12/13th A 93-100%, B			
Learning outcome	ès:							
Brief outline of th	e course:							
Recommended lite Vince M.: Macmil McCarthy, O'Dell: C. Oxengen, C. La Misztal M.: Thema www.bbclearninge ted.com/talks	erature: lan Grammar English Voca tham-Koenig atic Vocabular english.com	in Context, Macr bulary in Use, Cu New English Fi ry, Fragment, 199	nillan, 2008 UP, 1994 le Advanced, O 8	xford 2010				
Course language:								
Notes:								
Course assessment Total number of assessed students: 406								
A	A B C D E FX							
39.66	18.97	16.75	8.62	5.91	10.1			
Provides: Mgr. Let	nka Klimčáko	vá		·				
Date of last modif	ication: 14.09	9.2019						
Approved:								

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	of Science						
Course ID: KGER/ Course name: Communicative Grammar in German Language NJKG/07							
Course type, sco Course type: Pr Recommended Per week: 2 Per Course method	ppe and the met ractice course-load (h r study period: l: present	thod: ours): 28					
Number of ECT	S credits: 2						
Recommended s	semester/trimes	ster of the cours	e:				
Course level: I.,	II.						
Prerequisities:							
Conditions for c	ourse completi	on:					
Learning outcom	nes:						
Brief outline of t	the course:						
Recommended l	iterature:						
Course language	e:						
Notes:							
Course assessme Total number of	ent assessed studen	ıts: 54					
A	В	С	D	Е	FX		
59.26	59.26 11.11 9.26 3.7 9.26 7.41						
Provides: Mgr. E	Blanka Jenčíkov	á			l		
Date of last mod	lification: 03.05	5.2015					
Approved:							

University: P. J. S	University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science								
<b>Course ID:</b> ÚINF TVY/15	VF/ 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 ECT	S credits: 4							
Recommended se	emester/trimes	ter of the cours	<b>e:</b> 5.					
Course level: I., ]	I.							
Prerequisities:								
Conditions for co	ourse completi	on:						
<b>Learning outcom</b> To provide theor students with bas	es: etical backgrou ic knowledge o	and for studying f the theory of c	g computer scie omputability.	nce in general,	by familiarising			
Turing machine Kleene's normal machine, partial the halting proble	as a formalisat form theorem. T recursive and ca em of a Turing r	ion of the notion The equivalences Ilculable by a contraction of the c	on of an algorit of the notion of mputer program omputer program	thm. Partial recu a function calcul . Algorithmical u	arsive functions. able by a Turing indecidability of			
Recommended li 1. BRIDGES, Do ISBN:: 978-0387 2. BUKOVSKÝ, 3. MACHTEY, M NorthHolland, A 4. KRAJČI, Stan ucebneTexty/vyp	terature: ouglas. Computa 941745 Lev. Teória alg fichael a Paul Y Amsterdam 197 islav. Teória vyj ocitatelnost.pdf	ability, A Mather oritmov, ES UP. OUNG. An Intr 8. počítateľnosti. h	matical Sketch b JŠ, Košice, 1999 oduction to the ( ttp://ics.upjs.sk/~	ook. SpringerV 9. ISBN 8070973′ General Theory o ~krajci/skola/vyu	/erlag, 1994. 730 of Algorithms, cba/			
Course language	:							
Notes:								
<b>Course assessme</b> Total number of a	Course assessment Total number of assessed students: 277							
A	A B C D E FX							
46.93	46.93 11.91 13.0 5.78 6.14 16.25							
Provides: prof. R	NDr. Stanislav	Krajči, PhD.		•	•			
Date of last mod	fication: 08.07	.2021						
Approved:								

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

Slovak or Engl	ish						
Notes: Content prereq Algebra, progra	uisites: amming (Matlab)	).					
<b>Course assessn</b> Total number o	nent f assessed studen	ıts: 29					
А	В	С	D	Е	FX		
17.24	17.24 24.14 20.69 24.14 10.34 3.45						
Provides: doc.	Ing. Norbert Kop	čo, PhD., Ing. Pe	eter Lokša, PhD.				
Date of last mo	dification: 08.07	7.2021					
Approved:							

Faculty: Faculty of Science

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

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

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

Course method: present

**Number of ECTS credits: 5** 

Recommended semester/trimester of the course: 4.

Course level: I.

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

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

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

#### Learning outcomes:

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

### Brief outline of the course:

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

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

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

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

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

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

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

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

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

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

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

### **Recommended literature:**

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

<ol> <li>E. Comer, R.E. Droms: Computer Networks and Internets, Prentice Hall, 2003</li> <li>W. R. Stevens: TCP/IP Illustrated, Vol.1: The Protocols, Addison-Wesley, 1994</li> </ol>								
Course language:								
Notes:								
Course assessn Total number o	nent f assessed studen	ts: 791						
А	В	С	D	E	FX			
9.73	9.73 5.18 12.64 16.43 36.16 19.85							
Provides: doc.	RNDr. Jozef Jirás	sek, PhD., RNDr	. Peter Gurský, P	hD.				
Date of last modification: 09.07.2021								
Approved:								

University: P. J. Š	afárik Univers	ity in Košice						
Faculty: Faculty o	f Science							
Course ID: ÚCHV/ Course name: Coordination Chemistry CHU/03								
Course type, scop Course type: Lec Recommended c Per week: 2 / 1 P Course method:	e and the met eture / Practice ourse-load (h er study perio present	hod: ours): od: 28 / 14						
Number of ECTS	credits: 4							
Recommended set	mester/trimes	ter of the cours	se: 5.					
Course level: I.								
Prerequisities: ÚC	CHV/ACHU/0	3						
<b>Conditions for co</b> Final written exam	urse completi	on:						
Learning outcome The student acqui and properties of a compounds.	es: ires basic kno coordination c	wledge on the compounds as we	coordination cor ell as about the c	npounds, preparat	tion, isomerism in coordination			
Brief outline of th Definition and non numbers. Isomeris coordination comp	e course: menclature of sm, preparatio bounds.	coordination con n and stability c	mpounds. Centra	al atom and liganc compounds, chem	ls, coordination ical bonding in			
Recommended lit J. Ribas: Coordina J. C. Huheey, E. A G. A. Lawrance: I	erature: ation Chemistr Keiter, R. L. ntroduction to	y, Wiley-VCH, V Keiter: Inorgan Coordination C	Weinheim, 2008 ic Chemistry, Ha hemistry, Wiley,	aper Collins, New 2010.	York, 1993.			
Course language:								
Notes:								
Course assessmen Total number of as	it ssessed studen	ts: 63						
A	В	С	D	Е	FX			
55.56	55.56 22.22 15.87 3.17 0.0							
Provides: prof. RN	NDr. Juraj Čeri	nák, DrSc., doc.	RNDr. Juraj Ku	chár, PhD.	l			
Date of last modif	fication: 03.05	.2015						
Approved:								

University: P. J. Šafá	rik University in Košice							
Faculty: Faculty of S	cience							
<b>Course ID:</b> ÚINF/ KRS/15	Course ID: ÚINF/ Course name: Cryptographic systems and their applications KRS/15							
Course type, scope a Course type: Lectur Recommended cour Per week: 3 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 42 / 28 esent							
Number of ECTS cr	edits: 6							
Recommended seme	ster/trimester of the course: 3.							
Course level: I., II.								
Prerequisities:								
<b>Conditions for cours</b> Homeworks, midtern Final written exam, p	e completion: n written exam, active participation in laboratory exercises. possibly oral exam.							
This course covers the is on definitions, theo practice. Topics inclu- block cipher design a an introduction to cry- and certificates.	e basic knowledge in understanding and using cryptography. The main focus pretical foundations, and rigorous proofs of security, with some programming ide symmetric and public key encryption, message integrity, hash functions, and analysis, number theory, and digital signatures. The course also provides optographic protocols for authentication and key management, including PKI							
Brief outline of the c Classical cryptograp Symmetric ciphers - ciphers - RSA, Elga codes, digital signatu	<b>ourse:</b> hy, basic information theory, cryptoanalysis, security of classical ciphers. stream ciphers, block ciphers (DES, AES), modes of operation. Asymmetric mal, elliptic curve cryptosystems. Hash functions, message authentication res. Authentication, key establishment and distribution, certificates.							
Recommended litera 1. PAAR, Ch., PELZ 2. STINSON, D. R 3. MAO, W. Modern 4. MENEZES, A., O CRC Press, 1996. 5. SCHNEIER, B.: A	hture: L, J.: Understanding Cryptography, Springer 2010. PATERSON, M. B.: Cryptography: Theory and Practie. CRC Press, 2018. Cryptography: Theory and Practice. Prentice Hall, 2003. ORSCHOT, P. van, VANSTONE, S.: Handbook of Applied Cryptography. pplied Cryptography, 20th Edition, John Wiley & Sons Inc., 2015							
<b>Course language:</b> Slovak or English								
Notes: Content prerequisitie	s: basic number theory and algebra, basic programming							

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

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

Course languag	Course language:								
Notes:	Notes:								
Course assessment Total number of assessed students: 858									
А	В	B C D E FX							
10.61	9.21	17.95	22.84	32.52	6.88				
Provides: doc.	RNDr. Csaba Tör	ök, CSc., Mgr. I	Dávid Varga						
Date of last modification: 02.07.2021									
Approved:									

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

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

University: P. J. Šafár	ik University in Košice
Faculty: Faculty of Sc	ience
Course ID: KPPaPZ/PUDB/15	Course name: Drug Addiction Prevention in University Students
Course type, scope ar Course type: Practice Recommended cour Per week: 2 Per stud Course method: pres	nd the method: e se-load (hours): ly period: 28 sent
Number of ECTS cre	dits: 2
Recommended semes	ter/trimester of the course: 3., 5.
Course level: I.	
Prerequisities:	
<b>Conditions for course</b> 1st of the evaluation: a participation in worksl 50 - 45: A; 44 - 40: E the electronic bulletin a combined method.	e completion: active participation in the training part (30p). 2nd part of the evaluation: active hops (20p). In total, students can get 50p and the final evaluation is as follows: 3; 39-35: C; 34-30: D; 29 - 25: E 24 and less: FX. Detailed information in board of the course in AIS2. The teaching of the subject will be realized by
Learning outcomes: The student understand describe and explain the substance use. Student of substance and non- The student is also all approaches in prevent The student is able to and assume their positi	nds the principals of research data based prevention of risk behavior, can the determinants of risk behavior as well as protective and risk factors for t understands and adequately interprets the theory explaining the background substance addictions. ble to state and classify the types and forms of prevention, strategies and ion, can distinguish effective strategies from ineffective ones. adequately interpret their experience with preventive activities in the group tive effect as well as limitations and threats.
Brief outline of the co	ourse:
Recommended literat Orosová, O. a kol. (20 internetu v školskej pr Sloboda, Z., & Bukos and Practice. New Yor National and internatio	ture: 12). Základy prevencie užívania drog a problematického používania raxi. Košice: UPJŠ. ki, J. (Eds.). (2006). Handbook of Drug Abuse Prevention: Theory, Science, rk: Springer. onal scientific journals.
<b>Course language:</b> slovak	
Notes:	

Course assessment Total number of assessed students: 407								
А	A B C D E FX							
69.29	22.6	5.65	2.21	0.25	0.0			
<b>Provides:</b> prof. PhDr. Oľga Orosová, CSc., Mgr. Marta Dobrowolska Kulanová, PhD., Mgr. Lucia Barbierik, PhD., Mgr. Lenka Abrinková, Mgr. Frederika Lučanská, Mgr. Viera Čurová, Mgr. Marcela Štefaňáková, PhD.								
Date of last modification: 25.06.2021								
Approved:								

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> ÚINF/ EDS/15	Course name: Educational software
Course type, scope a Course type: Practic Recommended cou Per week: 2 Per stu Course method: pre	and the method: ce rse-load (hours): ady period: 28 esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course: 5.
Course level: I.	
Prerequisities:	
Conditions for course Conditions for ongoin 1. Creation of a work 2. Creation of a mult 3. Creation of an inste 4. Creation of an inste Conditions for the fir 1. Creation and prese Conditions for succes Obtaining at least 500 Learning outcomes: Students will receive a) presentation softw conceptual maps, b) programs for the c c) simulation and mod d) selected subject-on Students present and resources and tools in	<ul> <li>a completion:</li> <li>ng evaluation:</li> <li>sheet for student (with custom graphics).</li> <li>imedia educational presentation (with pictures, animations and sounds).</li> <li>ractive educational quiz (with various types of quiz items).</li> <li>ructional educational video.</li> <li>nal evaluation:</li> <li>entation of final project on the use of educational software in education.</li> <li>ssful completion of the course:</li> <li>% of points for ongoing and final assignments.</li> <li>, resp. deepen their basic skills in working with:</li> <li>are, programs for creating and editing images, animations, diagrams, sounds,</li> <li>reation of didactic tests, questionnaires, surveys,</li> <li>deling software,</li> <li>riented educational programs,</li> <li>discuss their idea of the use of educational software and educational Internet in the selected school subject.</li> </ul>
<ul> <li>Brief outline of the c</li> <li>1. Overview of educa</li> <li>2. Creating and procemaps).</li> <li>3. Creating raster ani</li> <li>4. Creation of instruct</li> <li>5. Electronic voting</li> <li>Forms).</li> <li>6. Creation of didacti</li> <li>7. Collaborative web</li> <li>8. Online communication</li> </ul>	ourse: tional software and educational web resources and tools. essing images into teaching aids (word clouds, QR codes, diagrams, concept mations. Creating and processing sounds. tional educational video. (Polleverywhere, Plickers, Kahoot!) and questionnaire creation (Google ic tests (Google Forms, HotPotatoes). applications (mind42, miro, whiteboard, padlet). ation 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 o	Total number of assessed students: 52							
A B C D E FX								
61.54	61.54         19.23         13.46         0.0         5.77         0.0							
Provides: doc. RNDr. Ľubomír Šnajder, PhD.								
Date of last modification: 01.08.2021								

Approved:

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

12. Giving examples								
13. Visual aids and numbers								
14. Referencing	time and place							
Presentation top	pics related to stu	dents'study field	S.					
Recommended study materials Redman, S.: En Press, 2003. Armer, T.: Cam Wharton J.: Aca Murphy, R.: En P. Fitzgerald : E https://worldser www.isllibrary.c	<b>literature:</b> provided by the o glish Vocabulary bridge English fo ademic Encounte glish Grammar ir nglish for ICT st vice/learningeng	course instructor in Use, Pre-inter or Scientists. CU rs. The Natural V n Use. Cambridg udies. Garnet Pu lish, https://spect	rmetdiate, Intern P, 2011. Vorld. CUP, 200 e University Pre blishing, 2011. ator.sme.sk	nediate. Cambrid 9. ss, 1994.	ge University			
Course languag	ge:							
Notes:								
Course assessm Total number of	ent assessed studen	ts: 2744		_				
А	В	С	D	Е	FX			
38.16	38.16 25.4 16.65 9.73 7.87 2.19							
Provides: Mgr.	Provides: Mgr. Lenka Klimčáková, Mgr. Viktória Mária Slovenská, Mgr. Zuzana Naďová							
Date of last mo	Date of last modification: 14.02.2021							
Approved:								

University: P. J.	Šafárik Univers	ity in Košice						
Faculty: Faculty	of Science							
Course ID: ÚIN BSSMI/15	ÚINF/ Course name: Essentials of Informatics							
Course type, sco Course type: Recommended Per week: Per Course methoo	ope and the met l course-load (h • study period: d: present	thod: ours):						
Number of ECT	<b>FS credits:</b> 1							
Recommended	semester/trimes	ster of the cours	e:					
Course level: I.	,							
Prerequisities: SLO1a/15	ÚINF/PSIN/15,Ú	JINF/PAZ1b/15,	ÚINF/OSY1/15,	ÚINF/AFJ1a/15,	ÚINF/			
Conditions for o	course completi	on:						
Learning outco	mes:							
Brief outline of	the course:							
Recommended	literature:							
Course languag	ge:							
Notes:								
Course assessm Total number of	Course assessment Total number of assessed students: 8							
А	В	С	D	Е	FX			
12.5	12.5 25.0 12.5 0.0 50.0 0.0							
Provides:								
Date of last mo	Date of last modification: 16.06.2017							
Approved:	Approved:							

University: P. J.	University: P. J. Šafárik University in Košice						
Faculty: Faculty	of Science						
Course ID: ÚCH PCH1/00	HV/ Course name: Food chemistry						
Course type, sco Course type: L Recommended Per week: 2 / 1 Course method	ope and the met ecture / Practice course-load (h Per study peri l: present	thod: ours): od: 28 / 14					
Number of ECT	S credits: 4						
Recommended	semester/trimes	ster of the cours	e: 5.				
<b>Course level:</b> I.,	II						
Prerequisities:							
Conditions for o	course completi	on:					
Learning outcome Students will re- importance and	<b>mes:</b> ecieve informati chemical change	ions and knowle es in food during	edges about che processing and	emical substance storage.	s in food, their		
<b>Brief outline of</b> The main catego carbohydrates. V colorants, toxic	<b>the course:</b> ries of substance Vater, minerals, compounds, adi	es in the most imp low concentration tives. Chemical r	ortant group of f n anorganic com eactions in dairy	food. Aminoacids pounds, vitamins y products.	, proteins, lipids, s. Hydrocarbons,		
Recommended	literature:						
Course languag	e:						
Notes:							
Course assessm Total number of	Course assessment Total number of assessed students: 256						
A	В	С	D	E	FX		
60.55	60.55 33.98 5.08 0.0 0.0 0.39						
Provides: RNDr. Ján Elečko, PhD.							
Date of last mod	lification: 11.09	0.2017					
Approved:							
L							

University: P. J. S	Šafárik Univers	ity in Košice				
Faculty: Faculty of Science						
<b>Course ID:</b> ÚCH BACHZ/06	Course ID: ÚCHV/       Course name: Fundamentals of Bioanalytical Chemistry         BACHZ/06       Course name: Fundamentals of Bioanalytical Chemistry					
Course type, sco Course type: Le Recommended Per week: 2 / 1 Course method	pe and the met ecture / Practice course-load (he Per study perio : present	hod: ours): od: 28 / 14				
Number of ECT	S credits: 5					
Recommended s	emester/trimes	ter of the cours	e: 3.			
Course level: I.						
Prerequisities:						
<b>Conditions for c</b> Elaboration and p	ourse completion of a	on: a semester projec	et with an assign	ed topic.		
Learning outcon Principles and the	nes: eoretical founda	tions the applica	tion of analytic	al methods in bio	analysis.	
Introduction to l analytes in biolo of sampling, the biological sample and management materials. Validat introduction, dist one substrate, the substrates. Mode	Bioanalytical C gical samples. ( suppressing of es. Analyzers, ec of quality in clin tion and Good L ribution, Mecha Michaelis cons rators of enzym	hemistry. Biolog Collection, transp f undesirable ph quipment and org nical laboratory. ( aboratory Practic nism of enzyme of tant, constant sp e activity. Select	gical samples of port and storage enomena. Select ganization of wo Quality manual, ee. Buffers in bio catalysis. The ki ecificity, lag pha ed methods for	elassification. Face e of samples, the cted methods of rk in a clinical lab calibration, contre- panalysis. Enzyme netics of enzymat ase, kinetics of re- analysis of biomo	ctors that affect main principles pretreatment of oratory. Control ol, and reference es in bioanalysis, ic reactions with actions with two plecules.	
Recommended li 1.Mikkelsen S.R. 2.Wilson I., Bioa Separations), Els 3.Lee, D.C., Web	terature: , Cortón E.: Bio nalytical Separa evier, 2003 bb, M. Pharmace	analytical Chem ations 4, (Handbo eutical Analysis,	istry, Wiley, 200 ook of Analytica Blackwell, 200	)4 al 3		
Course language						
Notes:						
Course assessme Total number of a	nt assessed studen	ts: 86				
A	В	С	D	Е	FX	
33.72	31.4	30.23	3.49	0.0	1.16	
Provides: doc. R	NDr. Katarína R	eiffová, PhD.		<u>.</u>		
Date of last mod	ification: 22.04	.2021				

Approved:

University: P. J	. Šafárik Univers	sity in Košice				
Faculty: Faculty of Science						
Course ID: ÚC VCHU/15	Course ID: ÚCHV/ Course name: General Chemistry VCHU/15					
Course type, sc Course type: I Recommended Per week: 4/2 Course metho	ope and the me Lecture / Practico d course-load (h 2 Per study peri d: present	thod: e iours): od: 56 / 28				
Number of EC	<b>FS credits:</b> 7					
Recommended	semester/trime	ster of the course	<b>e:</b> 1.			
Course level: I.				_		
Prerequisities:	ÚCHV/CHV1/9	9				
<b>Conditions for</b> Written test in t Oral examination	<b>course complet</b> he middle and th on.	ion: he end of the seme	ester.			
Learning outco To provide stud chemical bonds	mes: ents with knowl , physical prope	edge of atoms and tries of elements a	d molecules their and compounds.	r electronic struct	ture, theories of	
Brief outline of Main terms us periodicity and intermolecular Solutions. Che Classification o	the course: ed in chemistry its effect on interactions. Che mical equilibriu f chemical react	<ul> <li>Atoms – mode</li> <li>the properties of</li> <li>emical structure a</li> <li>m. Basis of che</li> <li>tions. Electrochem</li> </ul>	els of atoms, e elements, radi nd physical prop mical thermody istry.	lectron configura oactivity. Chemi perties of matter. mamics and che	ation, chemical ical bonds and State of matter. emical kinetics.	
Recommended 1. Atkins P., Jon 2. Russel J.B.: (	<b>literature:</b> nes L.: Chemical General Chemist	Principles, 2nd e ry, 2nd ed., McGr	d., Freeman, Ne aw Hill, Londor	w York 2002. n 1992.		
Course languag	Course language:					
Notes:						
Course assessme Total number of	ent f assessed studer	nts: 245				
А	В	C	D	Е	FX	
20.41	28.57	31.43	12.24	7.35	0.0	
Provides: prof.	RNDr. Vladimír	Zeleňák, DrSc.				
Date of last mo	dification: 03.0	5.2015				
Approved:						

University: P. J. Ša	fárik Univer				
		sity in Košice			
Faculty: Faculty of	Science				
Course ID: ÚCHV PACU/03	/ Course n	ame: General Co	ourse of Analytic	cal Chemistry - La	aboratory
Course type, scope Course type: Prac Recommended co Per week: 4 Per s Course method: 1	e and the me etice ourse-load (I tudy period present	ethod: hours): l: 56			
Number of ECTS	credits: 4				
Recommended ser	nester/trime	ester of the cours	se: 4.		
Course level: I.					
Prerequisities: ÚC	HV/ANCHU	J/ <b>03</b>			
Conditions for cou Assessment	rse complet	tion:			
Learning outcome Application of theo	s: pretical know	vledge to analytic	al laboratory pra	actise	
precipitation. Qua methods. Prepara curves, calculation Complexometry. S	ntitative and qu ntitative me tion of acc s in volume elected Instr	ethods. Gravime curate solutions. tric analysis. Aci umental analytica	try, general pr Indication of dimetry, alkalin l methods.	analysis, separati inciples of meth equvivalency netry. Manganom	nod. Volumetric point. Titration hetry. Iodometry.
Recommended lite D.Harvey: Modern D.A.Skoog: Princip E.Prichard: Quality	<b>Analytical</b> Analytical ( oles of Instru- in the Anal	Chemistry. McGra umental Analysis. ytical Chemistry	aw Hill, Boston, Saunders Col. I Laboratory, Wil	, 2000. Publishing, New Y ey, 1995	York 1985.
Course language:					
Notes:					
Course assessment Total number of as	t sessed stude	nts: 356			
A	В	C	D	Е	FX
56.74	29.78	10.96	1.12	1.4	0.0
Provides: doc. Ing. PhD., RNDr. Jana S	Viera Vojtel Sandrejová, I	ková, PhD., RND PhD.	r. Rastislav Sert	oin, PhD., RNDr.	Lívia Kocúrová,
Date of last modifi	cation: 03.0	5.2015			

University: P. J	. Šafárik Univers	sity in Košice			
Faculty: Facult	y of Science				
<b>Course ID:</b> KF, DF2p/03	Course na	ame: History of I	Philosophy 2 (Ge	neral Introductio	n)
Course type, so Course type: 1 Recommender Per week: 2 / Course metho	cope and the met Lecture / Practice d course-load (h 1 Per study peri od: present	thod: ours): od: 28 / 14			
Number of EC	TS credits: 4				
Recommended	semester/trimes	ster of the cours	<b>e:</b> 6.		
Course level: I.	, II.				
Prerequisities:					
Conditions for	course completi	on:			
Learning outco	omes:				
Brief outline of	the course:				
Recommended	literature:				
Course langua	ge:				
Notes:				=	
Course assessn Total number o	nent f assessed studen	ts: 742			
А	В	С	D	Е	FX
60.78	13.88	12.67	8.63	3.37	0.67
<b>Provides:</b> Doc. Stojka, PhD.	PhDr. Peter Nezi	ník, CSc., PhDr. ]	Katarína Mayero	vá, PhD., doc. M	gr. Róbert
Date of last mo	dification: 25.03	3.2020			
Approved:					

University: P. J.	. Šafárik Univers	sity in Košice			
Faculty: Faculty	y of Science				
Course ID: KP INP/17	E/ <b>Course na</b>	ame: Inclusive P	edagogy		
Course type, sc Course type: F Recommended Per week: 2 Po Course metho	ope and the me Practice d course-load (h er study period: d: present	thod: ours): 28			
Number of EC	<b>FS credits:</b> 2				
Recommended	semester/trimes	ster of the cours	<b>e:</b> 5.	_	
Course level: I.					
Prerequisities:					
Conditions for	course completi	ion:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	ge:				
Notes:					
Course assessm Total number of	ent f assessed studen	its: 42			
А	В	С	D	Е	FX
83.33	16.67	0.0	0.0	0.0	0.0
Provides: Paedl	Dr. Janka Ferenc	ová, PhD.			
Date of last mo	dification: 08.06	5.2021			
Approved:				_	

University: P. J. Š	afárik Univers	ity in Košice			
Faculty: Faculty of	of Science				
<b>Course ID:</b> ÚINF IKTP/15	/ Course na	me: Information	n and Communic	ation Technologi	es
Course type, scop Course type: Pra Recommended of Per week: 2 Per Course method:	be and the met actice course-load (h study period: combined, pre	t <b>hod:</b> ours): 28 esent			
Number of ECTS	credits: 2				
Recommended se	emester/trimes	ster of the cours	e: 3., 5.		
Course level: I.					
Prerequisities:					
<b>Conditions for co</b> Problems solved programs, text pro is accepted as the	urse completi during the sen cessors, intern exam with the	on: nester. A final p et resources and s ranking "A-výb	project using pre search tools. The orne".	sentation program ECDL certificate	ms, spreadsheet e (all 7 modulus)
<b>Learning outcom</b> To achieve and ex is acceptable in th	<b>es:</b> tend fundamer e EU region.	ntal information a	and communicati	ion knowledge to	the level which
Brief outline of the Text processing us Processing and ev Search, retrieval a Creating presentation	ne course: sing a word provident statuation of info and exchange of tions.	ocessor. ormation using a f information via	a spreadsheet. a the Internet.		
Recommended lit 1. Franců, M: Jak 978-80-251-1485- 2. Jančařík, A. et a 152 s. ISBN 80-23 3. Kolektív autorci internete: <a href="http://www.sylabusvide.com">http://www.sylabusvide.com</a> Sylabusvide.	terature: zvládnout test -8. al.: S počítačer 51-1844-3. ov: Sylabus EC www.ecdl.sk/b V01_FIN.pdf>	y ECDL. Praha : n do Evropy – E DL verzia 5.0. [4 uxus/docs//intern	Computer Press CDL. 2. vydanie on-line] [citovan ne_informacie/Sy	, 2007. 160 s. IS 2. Praha : Comput é 9.2.2010]. Dost ylabus_V5.0/200	BN ter Press, 2007. tupné na 90630ECDL-
Course language:					
Notes:					
Course assessmen Total number of a	nt ssessed studen	ts: 1022			
Α	В	С	D	Е	FX
65.46	17.71	6.95	3.62	1.66	4.6
Provides: Mgr. Al	lexander Szaba	ri, PhD., doc. R	NDr. Ľubomír Šr	najder, PhD.	

**Date of last modification:** 03.05.2015

Approved:

University: P. J.	Šafárik Univers	ity in Košice			
Faculty: Faculty	of Science				
<b>Course ID:</b> ÚIN IBdi/15	IF/ Course na	ame: Information	n security princip	les	
Course type, sco Course type: P Recommended Per week: 2 Pe Course method	ope and the met Practice I course-load (h er study period: d: present	thod: ours): 28			
Number of ECT	<b>S credits:</b> 3				
Recommended	semester/trimes	ster of the cours	se: 4., 6.		
Course level: I.					
Prerequisities:					
Conditions for o	course completi	on:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended	literature:				
Course languag	e:				
Notes:	,				
Course assessm Total number of	ent assessed studen	ts: 28			
Α	В	С	D	Е	FX
25.0	21.43	25.0	10.71	3.57	14.29
Provides: RND	: JUDr. Pavol So	okol, PhD.		<u>.</u>	
Date of last mo	dification: 03.05	5.2015			
Approved:					

University: P. J. Š	afárik Univers	ity in Košice			
Faculty: Faculty of	of Science				
Course ID: ÚCH ACHU/03	V/ Course na	me: Inorganic C	Chemistry		
Course type, scop Course type: Le Recommended o Per week: 3 / 1 H Course method:	be and the met cture / Practice course-load (h Per study perio present	hod: ours): od: 42 / 14			
Number of ECTS	<b>6 credits:</b> 6				
Recommended se	emester/trimes	ter of the cours	<b>e:</b> 2.		
Course level: I.					
Prerequisities: Ú	CHV/VCHU/1	0 and leboÚCH	V/VCHU/14 and	leboÚCHV/VCH	HU/15
<b>Conditions for co</b> Test in the middle Oral examination	e and at the end	on: of the semester.			
Learning outcom Aim of the cours metallic elements	es: e is to provide	the students wi	th a knowledge	of systematic ch	emistry of non-
Brief outline of the Electronic configure of non-metallic essilicon, boron and properties and re- important composi-	ne course: uration, abunda elements hydro ad rare gases. eactivity. Met unds.	nce, use, physica ogen, halogens, Binary and oth- als and transition	al and chemical p oxygen, sulphur er compounds f on elements. A	oroperties, prepar , nitrogen, phos formed by these budance, proper	ation, reactivity phorus, carbon, elements, their ties, reactivity,
Recommended life http://kosice.upjs. self study) Greenwood, N. N Atkins O., Overto Press, Oxford, 20	terature: sk/~vladimir.z ., Earnshaw, A on T., Rourke J. 06.	elenak/ACHU.ht : Chemistry of tl , Weller M., Arr	rm (ppt slides fro ne Elements. Perg nstrong F.: Inorg	om the lectures as gamon Press, Oxa anic Chemistry, U	a support for ford, 1984 Jniversity
Course language:	•				
Notes:					
<b>Course assessmen</b> Total number of a	nt ssessed studen	ts: 742			
A	В	С	D	E	FX
10.51	21.29	31.81	24.26	9.16	2.96
Provides: prof. RI	NDr. Vladimír	Zeleňák, DrSc.	1		
-					

Approved:

University: P. J. Safái	rik University in Košice
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Faculty: Faculty of Science

Course ID: ÚCHV/	Course name: Inorganic Chemistry II
ACH2/03	

#### **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: 7

#### **Recommended semester/trimester of the course:**

Course level: I.

Prerequisities: ÚCHV/ACH1/10 and leboÚCHV/ACHU/03

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

Written examination at the end of the course. The final mark is given by the sum of points from seminars (max. 10 points) and 3x30 points from written test, totally 100 points. To pass it is required to obtain at least 51 points as well as 51 % of points from every partial examination.

#### Learning outcomes:

Goal of the course is to provide the students with a knowledge of systematic chemistry of metallic elements.

#### Brief outline of the course:

Electronic configuration, abundance, use, physical and chemical properties and reactivity of the elements of the 1st, 2nd groups, transition metal elements, elements of the 12th group, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Se, Te, Po, lanthanides and actinides. Binary and other compounds formed by these elements, their properties and reactivity. General properties, structure and bonding in metals, co-ordination and organometallic compounds.

#### **Recommended literature:**

1. Greenwood, N. N., Earnshaw, A: Chemistry of the Elements. Pergamon Press, Oxford, 1984 2. Shriver, D.F., Atkins, P.W., Langford, C. H.: Inorganic Chemistry. 2ndEd., Oxford University Press, Oxford, 1995

#### **Course language:**

Notes:

#### **Course assessment**

Total number of assessed students: 645

А	В	С	D	Е	FX
12.56	20.62	30.08	24.96	7.29	4.5

Provides: prof. RNDr. Juraj Černák, DrSc., RNDr. Miroslava Matiková Maľarová, PhD.

Date of last modification: 03.05.2015

Approved:

Faculty: Faculty of Science

**Course ID:** ÚCHV/ **Course name:** Instrumental Analytical Chemistry ANCH1b/03

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:** 

Course level: I.

Prerequisities:

**Conditions for course completion:** 

Test / Exam

#### Learning outcomes:

Getting knowledge about the theoretical principles and instrumentation in analytical chemistry.

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

Spectroscopic methods of analysis. Electromagnetic radiation. Basic components of spectroscopic instrumentation. Sources of energy. Detectors. Spectroscopy based on absorption. Transmittance and absorbance. Beer's Law. Limitations to Beer's Law. Ultraviolet-visible and infrared spectrophotometry. Atomic absorption spectroscopy. Spectroscopy based on emission. Molecular photoluminescence spectroscopy. Atomic emission spectroscopy. Spectroscopy based on scattering. Mass spectrometry. Electrochemical methods of analysis. Potentiometric methods of analysis. Reference electrodes. Membrane electrodes. Coulometric methods of analysis. Voltammetric methods of analysis. Chromatographic methods. General theory of column chromatography. Optimizing chromatographic separations. Gas chromatography. High-performance liquid chromatography. Ion-exchange chromatography. Supercritical fluid chromatography.

#### **Recommended literature:**

1. Labuda a kol. Analytická chémia. ISBN: 9788022742429, Vydavateľstvo: STU Bratislava, Rok vydania: 2014, Počet strán: 671

2. Christian G.D. Analytical Chemistry. John Wiley & Sons, Inc. New York – Chichester – Brisbane – Toronto – Singapore 1994.

3. Holtzclaw H.F., Jr., Robinson W.R. College Chemistry with Qualitation Analysis. D.C. Heath and Company 1988.

#### Course language:

Notes:
Course assessment Total number of assessed students: 569							
A B C D E FX							
20.39 12.65 22.32 18.8 25.48 0.35							
Provides: prof. Mgr. Vasil' Andruch, DSc.							
Date of last modification: 31.01.2020							
Approved:							

Faculty: Faculty of Science

**Course ID:** ÚCHV/ **Course name:** Introduction to Environmental Chemistry UECH/03

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: 3.

Course level: I., II.

Prerequisities:

**Conditions for course completion:** 

Oral examination

#### Learning outcomes:

Introduction to topics in environmental chemistry and basic procedures applied for environmental protection.

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

Introduction to Environmental Chemistry

Chemical aspects of pollution and environmental problems. Composition and behavior of the atmosphere. Energy balance of the Earth and climate changes. Principles of photochemistry, photoprocesses in the atmosphere. Petroleum, hydrocarbons and coal (characteristics, sources and environmental pollution). Soaps, polymers and synthetic surfactants. Haloorganics and pesticides. Environmental chemistry of some important elements (C, N, S, P, halogens, biologically important metals ...). Environmental chemistry in aqueous media. Aqueous systems, parameters, cycles and their protection. The Earth's crust (rocks, minerals, soils). Natural and artificial radioactivity, utilization. Energy and energy sources (fossil fuels, nuclear, geothermal, solar energy, wind and water energy). Solid waste disposal and recycling.

### **Recommended literature:**

1. Gary W. van Loon, Stephen J. Duffy : Environmental Chemistry - A Global Perspective, Oxford University Press, Oxford 2003

2. R.A. Bailey, H.M. Clark, J.P. Ferris, S. Krause, R.L. Strong : Chemistry of the Environment, Academic Press, San Diego 2002

- 3. G. Schwedt: The Essential Guide to Environmental Chemistry, Wiley and Sons, London 2001
- 4. R.N. Reeve, J.D. Barnes: General Environmental Chemistry, Wiley, London 1994

5. G. Burton, J. Holman, G. Pilling, D. Waddington: Chemical Storylines, Heinemann, Oxford, London 1994

6. www

### **Course language:**

Notes:

Course assessment Total number of assessed students: 216							
A B C D E FX							
49.54	49.54 20.83 15.28 8.33 6.02 0.0						
Provides: doc. RNDr. Andrea Straková Fedorková, PhD.							
Date of last modification: 20.09.2017							
Approved:							

University: P. J. Šafá	University: P. J. Šafárik University in Košice					
Faculty: Faculty of S	Faculty: Faculty of Science					
Course ID: Dek. PF       Course name: Introduction to Study of Sciences         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 cr	edits: 2					
Recommended seme	ster/trimester of the cours	e: 1.				
Course level: I.						
Prerequisities:						
Conditions for cours	e completion:					
Learning outcomes:						
Brief outline of the c	ourse:					
Recommended litera	iture:					
Course language:						
Notes:						
Course assessment Total number of asses	Course assessment Total number of assessed students: 1734					
abs n						
86.51 13.49						
Provides: doc. RNDr. Marián Kireš, PhD.						
Date of last modification: 25.09.2019						
Approved:						

University: P. J. Š	University: P. J. Šafárik University in Košice						
Faculty: Faculty of	of Science						
<b>Course ID:</b> ÚINF UGR1/15	NF/ 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	<b>6 credits:</b> 5						
Recommended se	emester/trimes	ster of the course	e: 3.				
Course level: I., I	Ι.						
Prerequisities:							
Conditions for co	urse completi	on:					
<b>Learning outcom</b> To provide the stu graphics.	es: idents with kn	owledge of graph	nics algorithms a	and basic princip	les of computer		
Graphics hardwar drawing 2D primi spline forms, Béz perspective and Rendering techni computer animatio	e, input and ou itives. Filling a ier curves, B-sp parallel projec iques, photore on, virtual real	tput devices. Colo and clipping. Cur plines, surfaces. H tions. Visible-su alism, textures, ity.	or models, palette ve modeling, in Homogenous coor rface determina ray tracing, ra	es. Raster graphic terpolations and a ordinates, affine t tion, illuminatio diosity. Object	s algorithms for approximations, ransformations, n and shading. representations,		
<b>Recommended literature:</b> FOLEY, J. D., van DAM, A., FEINER, S., HUGHES, J.: Computer Graphics: Principles and Practice, Addison-Wesley, 1991 MORTENSON, M.E.: Geometric modeling, 2.ed., Willey, 1997							
Course language:	:						
Notes:							
Course assessment Total number of assessed students: 297							
Α	B C D E FX						
13.8 10.44 13.8 23.57 29.97 8.42							
Provides: doc. RN	Provides: doc. RNDr. Jozef Jirásek, PhD., RNDr. Rastislav Krivoš-Belluš, PhD.						
Date of last modi	fication: 03.05	5.2015					
Approved:							

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	of Science						
<b>Course ID:</b> ÚIN UIB1/17	Course ID: ÚINF/ Course name: Introduction to information security UIB1/17						
Course type, sco Course type: L Recommended Per week: 2 Pe Course method	ope and the met Lecture l course-load (h er study period: l: present	hod: ours): 28					
Number of ECT	<b>S credits:</b> 3						
Recommended	semester/trimes	ter of the cours	e: 3.				
Course level: I.,	N						
Prerequisities:							
Conditions for a	course completi	on:					
Learning outco	mes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	e:						
Notes:	,						
Course assessm Total number of	ent `assessed studen	ts: 56					
А	В	С	D	Е	FX		
37.5	37.5 37.5 14.29 7.14 1.79 1.79						
Provides: RNDr	: JUDr. Pavol So	okol, PhD.					
Date of last mod	dification: 27.03	.2019					
Approved:							

University: P I Šafár	ik University in Košice
<b>Faculty:</b> Faculty of Sc	cience
Course ID: ÚINF/ UNS1/15	Course name: Introduction to neural networks
Course type, scope an Course type: Lecture Recommended cour Per week: 2 / 2 Per s Course method: pres	nd the method: e / Practice rse-load (hours): study period: 28 / 28 sent
Number of ECTS cre	edits: 5
Recommended semes	ster/trimester of the course: 3.
Course level: I., II.	
Prerequisities:	
<b>Conditions for course</b> The condition for pas networks, successful algorithms, as well as	e completion: using the course is the realization of a project with the application of neural completion of two written tests in the field of neural networks and genetic successful completion of the written and oral part of the exam.
Learning outcomes: The result of the educa algorithms. The stude analysis and also work	ation is an understanding of the basic principles of neural networks and genetic ent will gain the ability to apply the acquired knowledge in intelligent data k with a selected tool for modeling neural networks.
<ul> <li>Brief outline of the constraint of the</li></ul>	ng from biology. Linear threshold units, polynomial threshold units, functions d units. r separable objects, adaptation process (learning), convergence of perceptron order perceptrons. etworks, hidden neurons, adaptation process (learning), backpropagation etworks. Hopfield neural networks, properties, associative memory model, ing, optimization problems (business traveler problem). created network. ART network, architecture, operations, initialization phase, arch and adaptation phase. Use of the ART network. died models in solving practical problems.
8. Motivation to mode 9. Genetic programmi blind algorithm and cl 10. Genetic and evolu 11. Special technique algorithms.	el genetic elements. Genetic algorithm. Application of genetic algorithms. ing, root trees, Read's linear code. Basic stochastic optimization algorithms: limbing algorithm. Forbidden search method. itionary programming with typing, examples of use. Grammatical evolution. es of evolutionary computations. Selection mechanisms in evolutionary
12. Use of genetic alg 13. Written test II. Recommended literat	ture:

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

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

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

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

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

## **Course language:**

Slovak or English

## Notes:

Content prerequisites:

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

### **Course assessment**

Total number of assessed students: 439

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

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

Date of last modification: 26.08.2021

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

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

Course assessment Total number of assessed students: 197							
A B C D E FX							
0.51	0.51 9.64 9.64 19.29 47.72 13.2						
Provides: RNDr. Andrej Gajdoš, PhD.							
Date of last modification: 19.09.2020							
Approved:							

University: P. J	. Šafár	ik Univers	ity in Košice				
Faculty: Facult	y of So	cience					
<b>Course ID:</b> ÚM MZIb/10	Course ID: ÚMV/ Course name: Mathematical foundations of informatics II MZIb/10						
Course type, sc Course type: 1 Recommended Per week: 2/2 Course metho	ope al Lectur l cour 2 Per s d: pre	nd the met e / Practice rse-load (h study perio sent	hod: ours): od: 28 / 28				
Number of EC	ГS cre	edits: 6					
Recommended	semes	ster/trimes	ster of the course	e: 2.			
Course level: I.							
Prerequisities:	ÚMV	/MZIa/10					
Conditions for Based on result Based on semes	<b>cours</b> s of tw stral ev	e completi vo tests and valuation a	<b>on:</b> l individual home nd examination to	eworks. est.			
Learning outco To extend the equations and in	mes: obtain nfinite	ed knowle series.	edge in mathema	ntics by topics	in integral calcul	us, differential	
Brief outline of Indefinite and c criteria. Series expansion.	the contract of fur	ourse: e integral a actions, Tay	nd their applicat ylor expansion. I	ions. Differentia Periodic functio	ll equations. Serie ns, trigonometric	es, convergence series, Fourier	
Recommended Huťka, Benko, D. Studenovská odbory, UPJŠ 2 D. Studenovská J. Ivan: Matema T. Katriňák a ko	<b>litera</b> Ďuriko , T. M 006 , T. M atika 2 ol.: Alg	<b>ture:</b> ovič: Mater adaras, S. adaras: Ma , Alfa, Bra gebra a teo	matika, Alfa, Bra Mockovčiak: Zbi atematika pre nen tislava 1989 retická aritmetika	tislava 1991 erka úloh z mate natematické odb a, Alfa, Bratislav	ematiky pre nema oory, UPJŠ 2006 va 1986	tematické	
<b>Course languag</b> Slovak	Course language: Slovak						
Notes:							
Course assessm Total number of	Course assessment Total number of assessed students: 123						
A		В	С	D	Е	FX	
2.44	2.44 9.76 8.94 22.76 49.59 6.5						
Provides: RND	r. And	rej Gajdoš,	, PhD.				
Date of last mo	difica	tion: 03.05	5.2015				
		1					

University: P. J	. Šafárik Univers	ity in Košice						
Faculty: Facult	y of Science							
Course ID: KP MMKV/17	E/ <b>Course na</b>	Course name: Multiculturalism and Multicultural Education						
Course type, sc Course type: 1 Recommended Per week: 2 P Course metho	cope and the met Practice d course-load (h er study period: d: present	thod: ours): 28						
Number of EC	TS credits: 2							
Recommended	semester/trimes	ster of the cours	e: 4.					
Course level: I.								
Prerequisities:								
Conditions for	course completi	on:						
Learning outco	omes:							
Brief outline of	the course:							
Recommended	literature:							
Course languag	ge:							
Notes:								
<b>Course assessm</b> Total number o	nent f assessed studen	ts: 119						
А	В	С	D	E	FX			
43.7	37.82	16.81	0.84	0.84	0.0			
Provides: Paed	Dr. Michal Novo	cký, PhD.						
Date of last mo	dification: 08.06	5.2021						
Approved:								

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

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

## Brief outline of the course:

Operating system structure and basic functions.

Different kinds of operating systems and their history.

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

Processes, process management, threads, scheduling, interprocess communication

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

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

I/O management, device drivers, interrupt handlers.

External memory (disk) - direct and sequential access.

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

## **Recommended literature:**

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

### **Course language:**

Notes:

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

University	Р	ТŠ	Šafárik	Univer	sity	in	Košice
University.	1.	J. K	Jararik	Univers	sity	III .	RUSICC

Faculty: Faculty of Science

Course ID: ÚCHV/ Course name: Organic chemistry OCHU/03

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: 6

Recommended semester/trimester of the course: 2.

Course level: I.

**Prerequisities:** ÚCHV/VCHU/15 and leboÚCHV/VCHU/14 and leboÚCHV/VCHU/10 and leboÚCHV/VACH/10

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

Two tests at lecture in 7 and 14th week. Test max 50 points. At least 25 points required. Written exam, 100 points. At least 51% of points required. Final evaluation: A 91-100 pts, B 81-90 pts, C 71-80 pts, D 61-70 pts, E 51-60 pts, FX 0-50 pts

### Learning outcomes:

Basic organic chemistry course.

## Brief outline of the course:

Chemical bonding Hybridization and Bonding Covalent bonds Double bonds and Triple Bonds Structural Formulas of Organic Molecules Polar Covalent Bonds and Electronegativity Constitutional Isomers Alkenes Electrophilic Additions Strong Brønsted Acids Lewis Acids (non-Proton Electrophiles) Electrophilic Halogen Reagents Other Electrophilic Reagents Reduction Oxidation Radical Additions Allylic Substitution Alkynes Addition Reactions Hydrogenation Electrophiles Hydration & Tautomerism Hydroboration Nucleophilile Addition & Reduction Acidity of Terminal Alkynes (Substitution of H) Alkyl Halides General Reactivity Substitution(of X) SN2 Mechanism SN1 Mechanism Elimination (of HX) Summary of Substitution vs. Elimination Substitution by Metals Elimination Reactions of Dihalides Alcohols Reactions of Alcohols Substitution of the Hydroxyl H Substitution of the Hydroxyl Group Elimination of Water Oxidation of Alcohols Reactions of Phenols Acidity of Phenols Ring Substitution of Phenols Oxidation to Quinones Aromatic compounds Electrophilic Substitution A Substitution Mechanism Reactions of Substituted Benzenes Reaction Characteristics Reactions of Disubstituted Rings Reactions of Substituent Groups Nucleophilic Substitution, Elimination & Addition Reactions Amines Basicity of Nitrogen Compounds Acidity of Nitrogen Compounds Important Reagent Bases Reactions of Amines Electrophilic Substitution at Nitrogen Preparation of 1°-Amines Preparation of 2° & 3°-Amines Reactions with Nitrous Acid Reactions of Aryl Diazonium Intermediates Elimination Reactions of Amines Oxidation States of Nitrogen Basic information: Aldehydes & Ketones Carboxylic Acids Carboxylic Derivatives Natural products

### **Recommended literature:**

1. on-line ppt presentation in MOODLE, moodle science.upjs.sk

2. Organic chemistry, Clayden, Greeves Warren & Wothers, Oxford University Press, 2010.

3. Organic chemistry, John McMurry, Brooks/Cole, a Thomson Learning Company 2004, Sixth Eddition, ISBN 0534389996.

4. Organic chemistry, Pavol Zahradník, Mária Mečiarová, Peter Magdolen, Univerzita Komenského v Bratislave, 2019, ISBN: 978-80-223-4589-7.

## **Course language:**

### Notes:

## Course assessment

Total number of assessed students: 785

А	В	С	D	Е	FX
3.18	7.01	13.25	23.44	47.52	5.61

**Provides:** RNDr. Slávka Hamul'aková, PhD., doc. RNDr. Miroslava Martinková, PhD., RNDr. Mária Vilková, PhD.

Date of last modification: 30.08.2021

University: P. J	. Šafárik Univers	ity in Košice				
Faculty: Facult	y of Science					
Course ID: ÚC POCHU/15	Course ID: ÚCHV/ Course name: Organic chemistry - Lab. POCHU/15					
Course type, sc Course type: I Recommended Per week: 4 Pe Course metho	ope and the met Practice d course-load (h er study period: d: present	<b>bod:</b> ours): 56				
Number of EC	<b>FS credits:</b> 4					
Recommended	semester/trimes	ster of the cours	se: 3.			
Course level: I.						
Prerequisities:	ÚCHV/OCHU/0	3				
Two tests 2x25 p. A 100 p. in to Grades: A: 91- Based on contin	p., twelve report otal. 100b, B: 81-90b, nuous evaluation.	ts 12x2 p., labor C: 71-80b, D: 6	atory skills 12 p 1-70b, E: 51-60t	o., short quizzes a o, Fx: 0-50b.	nd questions 14	
Learning outco Students will be laboratory. Stud knowledge from	ecome familiar w lents should mas n the basic course	ith the basic isol ter basic laborate e of organic cher	ation and purific ory technique an nistry in simple	cation methods us nd be able to appl synthetic projects	ed in a synthetic y the theoretical	
<b>Brief outline of</b> Preparation, iso on gaining the crystallization,	<b>the course:</b> Dation, purificat experimental sk sublimation and	ion and identifi ills in synthesis thin-layer chrom	cation of organ s of organic con atography.	ic compounds. T mpounds, distilla	The emphasis is tion, extraction,	
<b>Recommended</b> 1. Handout with 2. Organic cher	<b>literature:</b> n experimental pr nistry lectures.	ocedures http://l	kekule.science.u	pjs.sk/pochu.		
Course languag	ge:					
Notes:						
<b>Course assessm</b> Total number o	ent f assessed studen	ts: 181				
A	В	С	D	E	FX	
54.14	54.14 25.41 11.6 7.73 1.1 0.0					
<b>Provides:</b> RND Raschmanová, I	r. Slávka Hamuľa PhD., RNDr. Mar	aková, PhD., RN iana Budovská,	IDr. Ján Elečko, PhD.	PhD., RNDr. Jan	a Špaková	
Date of last mo	unication: 05.02					

Faculty: Faculty of Science

Course ID: ÚCHV/	Course name: Organic chemistry II
OCH1b/03	

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: 7

**Recommended semester/trimester of the course:** 

Course level: I.

Prerequisities:

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

Two tests at lecture in 7 and 14th week. Test max 50 points. At least 25 points required. Written exam, 100 points. At least 49% of points required.

Final evaluation: A 90-100 pts, B 80-89 pts, C 70-79 pts, D 60-69 pts, E 50-59 pts, FX 0-49 pts

## Learning outcomes:

Second part of two-semester organic chemistry course.

### Brief outline of the course:

Reaction Mechanisms, Mechanisms of Organic Reactions, Reactive Intermediates, Ionic Reactions Radical Reactions Bond Energy Reaction Energetics Activation Energy Reaction Rates and Kinetics Thermodynamic and Chemical Stability Aromaticity Benzene and Other Aromatic Compounds Fused Benzene Ring Compounds Other Aromatic Systems Factors Required for Aromaticity Stereoisomers Chirality and Symmetry Enantiomorphism Polarimetry Optical Activity Designating the Configuration of Stereogenic Centers The Sequence Rule for Assignment of Configurations to Stereogenic Carbons Compounds Having Two or More Stereogenic Centers Stereogenic Nitrogen Fischer Projection Formulas Aldehydes & Ketones Natural Products Synthetic Preparation Properties of Aldehydes & Ketones Reversible Addition Reactions Hydration & Hemiacetal Formation Acetal Formation Imine Formation Enamine Formation Cyanohydrin Formation Irreversible Addition Reactions Complex Metal Hydrides Organometallic Reagents Carbonyl Group Modification Wolff-Kishner Reduction Clemmensen Reduction Hydrogenolysis of Thioacetals Oxidations Reactions at the a-Carbon Mechanism of Electrophilic a-Substitution The Aldol Reaction Ambident Enolate Anions Alkylation of Enolate Anions Carboxylic Acids Natural Products Related Derivatives Preparation of Carboxylic Acids Reactions of Carboxylic Acids Salt Formation Substitution of Hydroxyl Hydrogen Substitution of the Hydroxyl Group Reduction & Oxidation Carboxylic Derivatives Reactions of Carboxylic Acid Derivatives Acyl Group Substitution Mechanism Reduction Catalytic Reduction Metal Hydride Reduction Diborane Reduction Reaction with Organometallic Reagents Reactions at the a Carbon Acidity of a C-H The Claisen Condensation Synthesis Applications Carbohydrates Glucose The Structure and Configuration of Glucose Anomeric Forms of Monosaccharides Glycosides Disaccharides Polysaccharides Lipids Fatty Acids Soaps & Detergents Fats & Oils Nucleic Acids Alkaloids Terpenes

## **Recommended literature:**

1. on-line moodle.science.upjs.sk

2. Organic Chemistry, Clayden, Greeves Warren & Wothers, Oxford University Press, 2010

3. Organic Chemistry, Solomon, Willey, 2009

4. Organic chemistry, John McMurry, Sixth Edition, 2004, Brooks/Cole, a Thomson Learning Company, ISBN: 0534389996.

## **Course language:**

Notes:

## Course assessment

Total number of assessed students: 610

А	В	С	D	Е	FX	
12.62	10.98	16.56	21.97	34.92	2.95	
Provides: doc. RNDr. Miroslava Martinková, PhD.						

Date of last modification: 05.02.2021

University: P. J.	. Šafárik Univers	ity in Košice					
Faculty: Faculty	y of Science						
Course ID: KP Pg/15	E/ Course name: Pedagogy						
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	ope and the met Lecture d course-load (h er study period: d: present	thod: ours): 28					
Number of EC	<b>FS credits:</b> 2						
Recommended	semester/trimes	ster of the cours	<b>e:</b> 3., 5.				
Course level: I.							
Prerequisities:							
Conditions for	course completi	on:					
Learning outco	mes:						
Brief outline of	the course:						
Recommended	literature:						
Course languag	ge:						
Notes:							
<b>Course assessm</b> Total number of	ent f assessed studen	ıts: 639					
А	В	С	D	Е	FX		
20.03	20.03 27.07 25.98 15.65 10.49 0.78						
Provides: PaedDr. Michal Novocký, PhD.							
Date of last mo	dification: 08.06	5.2021					
Approved:							

University: P I Š	afárik Univers	ity in Košice					
<b>Faculty:</b> Faculty of	of Science						
Course ID: ÚCH FCHU/10	se ID: ÚCHV/ Course name: Physical Chemistry						
Course type, scop Course type: Lea Recommended o Per week: 3 / 2 F Course method:	be and the mer cture / Practice course-load (h Per study peri present	thod: ours): od: 42 / 28					
Number of ECTS	credits: 6						
Recommended se	emester/trimes	ster of the cours	e: 4.				
Course level: I.							
<b>Prerequisities:</b> Ú( leboÚCHV/VCHU	CHV/VCHU/1 J/15	4 and leboÚCHV	//VCHU/10 and	leboÚCHV/VAC	TH/10 and		
<b>Conditions for co</b> Two partial tests f Examination.	<b>urse completi</b> rom computat	on: ional seminars.					
<b>Learning outcom</b> To provide the stu	es: Idents with bas	ic knowledge of	physical chemis	try.			
<b>Brief outline of th</b> Fundamental cor equilibria and di electrolytes. Elec corrosion. Chemic	ne course: ncepts of the agrams, laws strochemistry: cal kinetics, ca	rmodynamics, t for ideal gas an ionics and elec talysis. Adsorptic	hermochemistry, nd reals gases, trodics. Electro on.	, chemical equi liquids, solution des and electro	librium, phase is, solutions of chemical cells,		
Recommended lift T. Engel, P. Reid: P.W. Atkins: Phys W.J. Moore: Phys	terature: Physical Cher ical Chemistry ical Chemistry	nistry, Pearson Eo y, Oxford Univers y, Longman, Lono	lucat. Inc., San I ity Presss, Oxfo lon 1972 and ne	Francisco 2006 rd 1986, 1990, 19 wer editions	996		
Course language:							
Notes:							
Course assessmen Total number of a	nt ssessed studen	ts: 324					
Α	В	С	D	Е	FX		
32.72	19.75	14.2	17.9	12.35	3.09		
<b>Provides:</b> prof. R Ján Macko, PhD.,	NDr. Renáta O RNDr. Ivana Š	riňaková, DrSc., Sišoláková, PhD.	RNDr. Andrea N	Aorovská Turoňo	vá, PhD., Mgr.		
Date of last modi	fication: 12.05	5.2021					
Approved:							

Faculty: Faculty of Science

Course ID: ÚCHV/	Course name: Physical Chemistry II
FCH1b/10	

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:** 

Course level: I.

Prerequisities: ÚCHV/FCH1a/03 and leboÚCHV/FCHU/10

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

Two partial tests from computational seminars in 6th and 12th week of semester. Examination.

### Learning outcomes:

Understandable explain to students the principles of chemical kinetics of processes, to elucidate the kinetics and mechanism of some reactions. To analyse particularly the equilibrium and kinetics of electrode processes.

## Brief outline of the course:

Electrochemistry. Equilibrium homogeneous processesn electrolyte solutions. Charge transfer in electrolyte solutions. Nonequilibrium homogeneous processes. Transport processes in electrolyte solutions. Conductance and molar conductivity. Hindering effects. Transport numbers. Equilibrium in heterogeneous electrochemical systems. Pocesses on charged interfaces. Electrochemical cells and fuel cells. Classification of electrode types. Concentration cells. Electrolysis. Electrochemical power sources. Potentiometry. Electrical double layer. Surface tension.

Chemical kinetics. Homogeneous processes. Reaction rate. Reaction order. Classification of chemical reactions. Elementary chemical reactions. Mechanism and kinetics equations of complicated chemical processes. Methods of rate low determination. Theory of chemical kinetics. Ttemperature dependence of reaction rates. Collision theory. Activated complex theory. Chain reactions. Structure and rate lows of chain reactions. Explosion. Polymerisation reactions. Photochemical reactions. Catalysis. Theory of homogeneous catalysis. Chemical oscillation reactions. Heterogeneous processes. Difusion. Physical and chemical adsorption. Adsorption and diffusion. Processes in heterogeneous electrochemical systems. Electrode kinetics, activation and diffusive mechanism of charge transfer.

Application of theoretical relationships on the solving of concrete problems and on the calculation of examples during seminars.

### **Recommended literature:**

T. Engel, P. Reid : Physical Chemistry, Pearson Educat. Inc., San Francisco 2006 P.W. Atkins : Physical Chemistry,Oxford University Presss, Oxford 1986, 1990, 1994, 1998 W.J. Moore : Physical Chemistry,Longman, London 1972 and newer editions

Course languag	Course language:					
Notes:						
Course assessment Total number of assessed students: 569						
А	B C D E FX					
15.82	18.45         22.32         19.33         20.39         3.69					
<b>Provides:</b> prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Jana Shepa, RNDr. Ondrej Petruš, PhD., RNDr. Radka Gorejová, RNDr. Dominika Capková						
Date of last modification: 20.09.2017						
Approved:						

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University: P. J. Šafárik University in Košice							
Faculty: Facult	Faculty: Faculty of Science						
Course ID: ÚF FPCh/08	V/ Course na	me: Physics for	Chemists				
Course type, sc Course type: 1 Recommended Per week: 2 / 2 Course metho	Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present						
Number of EC	<b>FS credits:</b> 6						
Recommended	semester/trimes	ster of the cours	e: 1.				
Course level: I.							
Prerequisities:							
<b>Conditions for</b> Test-papers (2). Exam.	course completi	on:					
Learning outco Completing the understand thei	mes: e course student r relation to chen	s will get knov nistry.	vledge of funda	mental physical	laws and will		
Brief outline of Kinematics and The kinetic the liquids. Mechan current. Magne	<b>Brief outline of the course:</b> Kinematics and dynamics of mass point, rigid bodies and fluids. Structure and properties of materia. The kinetic theory of gases and the foundations of thermodynamics. Structure and properties of liquids. Mechanical properties of solids, Hooke's Law. Stationary el. field and constant electric current Magnetic field. Optics						
<ul> <li>Recommended literature:</li> <li>1. V. Hajko, J. Daniel-Szabó: Základy fyziky. Veda, Bratislava, 1980.</li> <li>2. Š. Veis, J. Maďar, V. Martišovič: Všeobecná fyzika 1, Mechanika a molekulová fyzika. Alfa, Bratislava, 1978.</li> <li>3. P. Čičmanec: Všeobecná fyzika 2, Elektrina a magnetizmus. Alfa, Bratislava, 1980.</li> <li>4. R.P. Feynman, R.B. Leighton, M. Sands: Feynmanove prednášky z fyziky 1-5. Alfa, Bratislava, 1985.</li> <li>5. V. Hajko a kol.: Fyzika v príkladoch. Alfa, Bratislava, 1983.</li> </ul>							
Course language: Slovak language.							
Notes:							
Course assessm Total number of	Course assessment Total number of assessed students: 577						
А	В	С	D	Е	FX		
22.18	29.81	28.77	12.31	6.76	0.17		
Provides: doc. 1	Mgr. Gregor Bán	ó, PhD., RNDr. Z	Zuzana Jurašekov	/á, PhD.			

**Date of last modification:** 03.05.2015

	COURSE INFORMATION LETTER
University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚCHV/ ADP/03	Course name: Porous materials and their applications
Course type, scope a Course type: Lectur Recommended cou Per week: 2 / 1 Per Course method: pre	Ind the method: re / Practice rse-load (hours): study period: 28 / 14 esent
Number of ECTS cr	redits: 5
Recommended seme	ester/trimester of the course: 6.
Course level: I., II., I	II.
Prerequisities:	
<b>Conditions for cours</b> Written test in the mi	se completion: iddle and the end of the semester.
Learning outcomes: To make the acquain investigation. To gen area and pore size of	tance of various types of advanced porous solids and basic methods for their up the students with the methods used in characterisation of specific surface different types of porous materials.
<b>Brief outline of the c</b> Terminology and p Methodology of adsc	<b>course:</b> rincipal terms associated with powders, porous solids and adsorption.

Terminology and principal terms associated with powders, porous solids and adsorption. Methodology of adsorption at the gas-solid interface, liquid-solid interface. Assessment of surface area and porosity. Inorganic materials (active carbon, metal oxides, zeolites, clay minerals, new advanced materials) and phenomenon of adsorption. Application in the industry and everyday life.

### **Recommended literature:**

1. F. Rouquerol, J. Rouquerol, K. Sing: Adsorption by powders and porous solids, Academic press, London, UK, 1999

2. S. J. Gregg, K.S.W. Sing: Adsorption, surface area and porosity, Academic Press, London,, UK, 1982.

3. V. Zeleňák: Adsorption and porosity of solid substances, internal study text, PF UPJŠ, 2007.

### **Course language:**

Notes:

Course asso	essment				
Total numb	er of assesse	d students: 8	8		
А	В	С	D	Е	FX
77 77	10.22	2.27	0.0	0.0	0.0

 77.27
 10.23
 2.27
 0.0
 0.0
 0.0
 10.23

 Provides: prof. RNDr. Vladimír Zeleňák, DrSc.

 Date of last modification: 03.05.2015

 Approved:

Р

Ν

University: P. J. Šafár	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> KPPaPZ/PP/15	Course name: Positive Psychology
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent
Number of ECTS cro	edits: 2
Recommended seme	ster/trimester of the course: 4., 6.
Course level: I.	
Prerequisities:	
<b>Conditions for cours</b> Assessment is based of format. Up-to-date in on the electronic boar	e completion: on interim evaluation. The subject will be taught in both present and distance formation concerning the subject for the given academic year can be found rd of the subject in the Academic information system of the UPJŠ.
as the possibility of of psychology. The challenges and issues in contemporary soci current topics of posi	application of Positive Psychology as a new and rapidly developing field aim of the subject is mainly to develop and apply critical thinking to the s that Positive Psychology brings and raises in the context of the individual ety. Emphasis is placed on the ability to independently and critically process tive psychology.
<ul> <li>Brief outline of the c</li> <li>Different perspecti</li> <li>Main theoretical ap</li> <li>Positive emotions a</li> <li>Meaningfulness</li> <li>Positive interperso</li> <li>Post-traumatic grov</li> <li>Hope and optimism</li> <li>Gratitude</li> <li>Spirituality as a per</li> <li>Wisdom</li> <li>Positive institution</li> <li>New themes and the second second</li></ul>	ourse: ves on well-being nad happiness in psychology pproaches to positive psychology and positivity nal relations wth n rsonality dimension ns topics in PP
Brewer, M. B, Hwest Deci, E., Ryan R. M., Křivohlavý, J.: Poziti Křivohlavý, J.: Psych Křivohlavý, J.: Psych	one, M: Emotion and Motivation, Blackwell, 2004 Handbook of Self – Determination Reasearch, Rochester, 2002 vní psychologie. Praha, Portál, 2003 ologie vděčnosti a nevděčnosti. Praha, Grada, 2007 ologie 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.:Pruvodce pozitivní psychologií, Praha, Grada, 2012 Course language: Notes: Course assessment Total number of assessed students: 280

А	В	С	D	Е	FX	
98.21	1.07	0.36	0.0	0.36	0.0	
Provides: Mgr. Jozef Benka, PhD. et PhD.						

Date of last modification: 25.06.2021

University	<b>P</b> 1	I Šafárik	University	in Košice
University.	F. J	J. Salalik	University	III KUSICE

Faculty: Faculty of Science

Course ID: ÚCHV/	<b>Course name:</b> Practical from Inorganic Chemistry
PACHU/03	

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.

**Prerequisities:** ÚCHV/VCHU/14 and leboÚCHV/VCHU/15 and leboÚCHV/VCHU/10 and leboÚCHV/VACH/10

**Conditions for course completion:** 

### Learning outcomes:

The practical acquirements at preparation and study of inorganic compounds and their physicochemical properties by common laboratory techniques.

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

The utilization of common laboratory techniques for preparation of elements (H2, O2, Cu, Ni), oxides(CO2, Al2O3·xH2O), nitrides(Mg3N2), acids (HNO3, H3BO3), salts((NH4)2SO4, KMnO4), binary salts(NH4)Fe(SO4)2·12H2O), halides (CuCl, CuCl2·2H2O, SnI4, CuBr2) and coordination compounds ([Cr2(CH3COO)4(H2O)2], [CoCl2(en)2]Cl, [Cu(NH3)4]SO4·H2O, K3[Al(C2O4)3]·3H2O).

### **Recommended literature:**

Z. Vargová, J. Kuchár: Praktikum z anorganickej chémie, Košice, 2008

M. Reháková, M. Dzurillová, V. Zeleňák, V. Urvichiarová: Laboratórna technika, PF UPJŠ, Košice, 1999

### **Course language:**

Notes:

### **Course assessment**

Total number of assessed students: 564

А	В	С	D	Е	FX
51.95	28.37	14.36	2.48	1.95	0.89

**Provides:** doc. RNDr. Juraj Kuchár, PhD., RNDr. Martin Vavra, PhD., RNDr. Miroslava Matiková Maľarová, PhD.

Date of last modification: 03.05.2015

University: P. J.	. Šafár	ik Univers	ity in Košice					
Faculty: Faculty	y of So	cience						
<b>Course ID:</b> ÚC PFCU/03	HV/	Course na	me: Practical in	Physical Chem	istry			
Course type, sc Course type: H Recommended Per week: 3 Pe Course metho	Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 3 Per study period: 42 Course method: present							
Number of EC	ГS cre	edits: 4						
Recommended	semes	ster/trimes	ter of the cours	e: 5.				
Course level: I.	, II.							
Prerequisities:								
<b>Conditions for</b> Approved labor Assessment.	course atory 1	e <b>completi</b> reports.	on:					
Learning outco Theoretical pri experiments.	mes: inciple	es, descrip	tion of each t	echnique and	appropriate phys	sical chemistry		
Brief outline of Experimental of chemical equilil ebulioscopy), ac Experimental vo constants, activ polarography) a	the coverific bria (d dsorpt erifica vity cound che	ourse: ation of etermination ion. tion of theo pefficients, emical kino	theoretical know on of enthalpy, pl pretical knowledg electromotive f etics (determinati	vledge on the nase diagrams), ge on electroche force of galvan on of rate const	rmodynamics, th colligative proper mistry (conductiv tic cell, Daniell o ants).	ermochemistry, ties (cryoscopy, ity, dissociation cell, potentials,		
Recommended B.P. Levitt: Find W.J. Moore: Ph P.W. Atkins: Ph	<b>litera</b> dlay's ysical ysical	<b>ture:</b> Practical F Chemistry Chemistry	Physical Chemistr , Longman, Lonc , Oxford Univers	ry, Longman, Lo lon 1972 sity Press, Oxfor	ondon 1973 rd, New York 200	2		
Course languag	ge:							
Notes:								
Course assessm Total number of	Course assessment Total number of assessed students: 351							
А		В	С	D	Е	FX		
73.5	73.5 21.08 4.56 0.57 0.28 0.0							
Provides: RND	r. Fran	tišek Kaľa	vský, RNDr. And	lrea Morovská ′	Turoňová, PhD.			
Date of last mo	difica	tion: 12.05	5.2021					
Approved:								

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

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

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
<b>Course ID:</b> 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.	Course level: I.				
Prerequisities:					
<b>Conditions for course completion:</b> 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 requirements for sele the bachelor's thesis	the principles of creation and structure of bachelor's theses. Criteria and ecting an appropriate bachelor thesis topic. Knowledge about the structure of assignment.				
<ul> <li>Brief outline of the course: <ol> <li>Principles in creating a final thesis.</li> <li>The presentations of bachelor thesis topics by potential supervisors.</li> <li>The presentations of bachelor thesis topics by potential supervisors.</li> <li>The presentations of bachelor thesis topics by potential supervisors.</li> </ol> </li> <li>Bachelor thesis and its objectives.</li> <li>Assignment of bachelor theses.</li> <li>Structure of different types of bachelor theses.</li> <li>Requirements for final bachelor theses.</li> <li>Requirements for final theses.</li> <li>Presentation of selected topics of final theses.</li> <li>Presentation of selected topics of final theses.</li> </ul>					
Recommended liter 1. STN 01 6910. Rul 2. STN ISO 2145. D 1997. 3. STN ISO 690. Inferences to informa 4. KATUŠČÁK, Dar	<b>ature:</b> les of writing and editing documents. 2011. ocumentation. Numbering of sections and subsections of written documents. formation and documentation. Instructions for creating bibliographic ation sources and their citation. 2012 hiel. How to write final and qualification theses. Enigma, 2013				

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

Course language: Slovak or English				
Notes:				
Course assessment Total number of assessed students: 307				
abs	n			
94.14	5.86			
Provides: RNDr. Ľubomír Antoni, PhD.				
Date of last modification: 26.08.2021				
Approved:				
	COURSE INFORMATION LETTER			
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University: P. J. Šafá	rik University in Košice			
Faculty: Faculty of S	cience			
<b>Course ID:</b> ÚINF/ SPP1a/15	Course name: Programming environments in schools I			
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 2 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 28 esent			
Number of ECTS cr	edits: 4			
Recommended seme	ster/trimester of the course: 3.			
Course level: I.				
Prerequisities: ÚINF	/PAZ1a/15			
<b>Conditions for cours</b> At least 50 % of the r A minimum of 50 %	e completion: narks in the intermediate assessment marks in the mid-term and end-of-semester practical tests			
Learning outcomes: Ability to implement Ability to design an Formulate and solve	more complex algorithms algorithms in the Python programming language. Ind program educational software in the Python programming language. School computer science problems.			
<b>Brief outline of the c</b> 1. Introduction to Pyt 2. Simple data types 3. Control structures 4. Function definition 5. Import and creation 6. Error types and err	ourse: hon, basic features of Python, syntax. (number, logical type), structured types (string, list, dictionary, set, tuple). (loops, conditional statements, exception management). n (parameters, return value), function documentation. n of modules. or 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 objectoriented 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

GUNIŠ, Ján, Viera MICHALIČKOVÁ, Martin CÁPAY a Ľubomír ŠNAJDER.

Riešenieproblémov a programovanie. Bratislava: Centrum vedecko-technických informácií SR, 2020.ISBN 978-80-89965-62-5.

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.

KRNÁČ, Jozef, Miloslava SUDOLSKÁ a Ľudovít TRAJTEĽ. 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.

# **Course language:**

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

Notes:

# Course assessment

Total number of assessed students: 23

А	В	С	D	Е	FX
8.7	21.74	43.48	8.7	13.04	4.35
Provides: doc. RNDr. L'ubomír Šnajder, PhD., PaedDr. Ján Guniš, PhD.					
Date of last modification: 31.08.2021					
Annuovada					

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

<b>Course ID:</b> ÚINF/	Course name: Programming environments in schools II
SPP1b/15	

# Course type, scope and the method:

**Course type:** Lecture / Practice

Recommended course-load (hours):

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

Course method: present

### Number of ECTS credits: 4

# Recommended semester/trimester of the course: 6.

Course level: I.

**Prerequisities:** ÚINF/SPP1a/15

# **Conditions for course completion:**

Conditions for ongoing evaluation:

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:

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:

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: 17

А	В	С	D	Е	FX
23.53	23.53	11.76	23.53	5.88	11.76

Provides: doc. RNDr. Ľubomír Šnajder, PhD.

Date of last modification: 01.08.2021

Faculty: Faculty of Science

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

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

Per week: 3 Per study period: 42

Course method: present

Number of ECTS credits: 3

**Recommended semester/trimester of the course:** 3.

Course level: I.

Prerequisities:

# **Conditions for course completion:**

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

Creating and presenting a programmed robotic model including documentation.

### Learning outcomes:

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

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

# Brief outline of the course:

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

# **Recommended literature:**

1. BUMGARDNER, J. (2007) The Origins of Mindstorms. Wired, 2007. http://www.wired.com/geekdad/2007/03/the\_origins\_of\_/

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

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

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

### Course language:

Notes:

Course assessment Total number of assessed students: 49							
A B C D E FX							
53.06	53.06 22.45 12.24 2.04 0.0 10.2						
Provides: RNDr. Zuzana Bednárová, PhD.							
Date of last modification: 03.05.2015							
Approved:							

University: P. J. Ša	ărik Universit	y in Košice
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Faculty: Faculty of Science

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

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

Per week: 2 Per study period: 28

Course method: present

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

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

**Conditions for course completion:** 

50% of the marks from continuous assignments

### Learning outcomes:

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

# Brief outline of the course:

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

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

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

# **Recommended literature:**

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

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

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

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

Page: 116

	COURSE INFORMATION LETTER
University: P. J. Šafán	ik University in Košice
Faculty: Faculty of So	cience
<b>Course ID:</b> ÚINF/ PAZ1a/15	Course name: Programming, algorithms, and complexity
Course type, scope at Course type: Lectur Recommended cour Per week: 3 / 4 Per Course method: pre	nd the method: e / Practice se-load (hours): study period: 42 / 56 sent
Number of ECTS cro	edits: 8
Recommended semes	ster/trimester of the course: 1.
Course level: I., II.	
Prerequisities:	
<b>Conditions for cours</b> Graded activities duri Final examination: pr Rules to pass the subje final project) and test defined limit of total p	e <b>completion:</b> ng semester: assignments, small exams, midterm, final project. actical finalterm focused on a complex task. ect: Pass the minimal limit of points for category of homeworks (assignments, s (small exams, midterm). Get at least 42% from the finalterm and pass the points for all graded activities.
Learning outcomes: Get an ability to impl oriented programming	ement basic Java programs and obtain essential knowledge related to object- g.
Brief outline of the contract	<b>Durse:</b> a and JPAZ2 framework, first Eclipse project, interactive communication with raphics, repeating code in loops, notion of class, object, and method. iables, variable types, arithmetic expressions, random numbers, random walk, ing a value from a method, reference and reference variables, debugging.
<ol> <li>Primitive and referinstance variables.</li> <li>Array of primitive</li> <li>Advanced array alg</li> </ol>	ence types, chars, String objects (including basic algorithms), mouse events, values and array of references, simple array algorithms. gorithms, two-dimensional array.
<ol> <li>7. Exceptions and exc</li> <li>8. Reading from text</li> <li>9. Creating classes, e</li> </ol>	eption handling, files and directories, writing to text files. files. encapsulation, getters and setters, constructors and their hierarchy, method
overloading. 10. Inheritance and po 11. Java Collections autoboxing, interfaces 12. Access modifiers, static methods and va	blymorphism. Framework, ArrayList class, wrapper classes for primitive types and s List, Set, Map and their implementations, methods equals and hashCode. abstract classes and methods, creating and implementing interfaces, sorting, riables.
13. Creating and through	wing exceptions, checked and runtime exceptions, JavaDoc, Maven.
Recommended litera	ture:

# **Recommended literature:**

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

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

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

# **Course language:**

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

Notes:

# **Course assessment**

Total number of assessed students: 717

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

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

Date of last modification: 31.08.2021

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

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

# Course type, scope and the method:

**Course type:** Lecture / Practice

Recommended course-load (hours):

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

Course method: present

Number of ECTS credits: 7

# **Recommended semester/trimester of the course: 2**.

Course level: I., II.

**Prerequisities:** ÚINF/PAZ1a/15

# **Conditions for course completion:**

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

Final examination: practical and theoretical finalterm.

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

# Learning outcomes:

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

# Brief outline of the course:

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

# **Recommended literature:**

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

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

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

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

# **Course language:**

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

# Notes:

# Course assessment<br/>Total number of assessed students: 1222ABCDEFX13.757.539.919.3121.5227.99

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

Date of last modification: 31.08.2021

University: P. J.	. Šafárik Univers	ity in Košice				
Faculty: Faculty	y of Science					
<b>Course ID:</b> 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 EC	IS credits: 2		1 2 5			
Recommended	semester/trimes	ster of the cours	e: 1., 3., 5.			
Course level: 1.	, II					
Prerequisities:						
Conditions for	course completi	on:				
Learning outco	mes:					
Brief outline of	the course:					
Recommended literature:						
Course languag	ge:					
Notes:						
Course assessm Total number of	ent f assessed studen	ts: 517				
А	В	С	D	Е	FX	
22.82	16.05	21.66	18.57	17.99	2.9	
Provides: PhDr. Anna Janovská, PhD., Mgr. Ondrej Kalina, PhD.						
Date of last mo	dification: 28.06	5.2021				
Approved:						

Faculty: Faculty of Science         Course ID:         KPPaPZ/PKŽ/15         Course type, scope and the method:         Course type: Practice         Recommended course-load (hours):         Per week: 2 Per study period: 28         Course method: present         Number of ECTS credits: 2         Recommended semester/trimester of the course: 3.         Course level: I.         Prerequisities:         Conditions for course completion:         The evaluation of the course and its subsequent completion will be based on clearly and objectively
Faculty of Science         Course ID:       Course name: Psychology of Everyday Life         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: 1.         Prerequisities:       Conditions for course completion:         The evaluation of the course and its subsequent completion will be based on clearly and objectively
Course ID: KPPaPZ/PKŽ/15       Course name: Psychology of Everyday Life         Course type, scope and the method: Course type: Practice       Course type: Practice         Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present       Course method: present         Number of ECTS credits: 2       Recommended semester/trimester of the course: 3.         Course level: I.       Prerequisities:         Conditions for course completion: The evaluation of the course and its subsequent completion will be based on clearly and objectively
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. Prerequisities: Conditions for course completion: The evaluation of the course and its subsequent completion will be based on clearly and objectively
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. Prerequisities: Conditions for course completion: The evaluation of the course and its subsequent completion will be based on clearly and objectively
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.         Prerequisities:         Conditions for course completion:         The evaluation of the course and its subsequent completion will be based on clearly and objectively
Recommended course-load (nours):         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.         Prerequisities:         Conditions for course completion:         The evaluation of the course and its subsequent completion will be based on clearly and objectively
Course method: present         Number of ECTS credits: 2         Recommended semester/trimester of the course: 3.         Course level: I.         Prerequisities:         Conditions for course completion:         The evaluation of the course and its subsequent completion will be based on clearly and objectively
Number of ECTS credits: 2         Recommended semester/trimester of the course: 3.         Course level: I.         Prerequisities:         Conditions for course completion:         The evaluation of the course and its subsequent completion will be based on clearly and objectively
Number of EC 1S credits: 2         Recommended semester/trimester of the course: 3.         Course level: I.         Prerequisities:         Conditions for course completion:         The evaluation of the course and its subsequent completion will be based on clearly and objectively
Recommended semester/trimester of the course: 3.         Course level: I.         Prerequisities:         Conditions for course completion:         The evaluation of the course and its subsequent completion will be based on clearly and objectively
Course level: I.  Prerequisities:  Conditions for course completion:  The evaluation of the course and its subsequent completion will be based on clearly and objectively
Prerequisities: Conditions for course completion: The evaluation of the course and its subsequent completion will be based on clearly and objectively
<b>Conditions for course completion:</b> The evaluation of the course and its subsequent completion will be based on clearly and objectively
<ul> <li>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.</li> <li>1. Active participation in seminars</li> <li>2. Elaboration and presentation of PPT presentation on the assigned topic. Maximum number of points 20; minimum number of points 11.</li> <li>3. Elaboration of an essay in the range of 4xA4 (standard pages). Maximum number of points 20; minimum number of points 11.</li> <li>The final evaluation (grade) is the sum of points for the presentation and the essay.</li> <li>A 40b - 37b</li> <li>B 36b - 33b</li> <li>C 32b - 29b</li> <li>D 28b - 25b</li> <li>E 24b - 21b</li> </ul>

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: 164

А	В	С	D	Е	FX
51.22	14.02	25.61	6.71	1.83	0.61

Provides: Mgr. Ondrej Kalina, PhD.

Date of last modification: 24.06.2021

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

University: P. J.	Šafárik Univers	ity in Košice			
Faculty: Faculty	of Science				
Course ID: KPI OLŠ/15	E/ 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 ECT	<b>FS credits:</b> 2				
Recommended	semester/trimes	ster of the cours	e: 3., 5.		
Course level: I.					
Prerequisities:					
Conditions for	course completi	on:			
Learning outco	mes:				
Brief outline of	the course:				
Recommended literature:					
Course language:					
Notes:					
Course assessm Total number of	ent fassessed studen	ts: 234			
А	В	С	D	Е	FX
44.44	26.92	17.09	7.69	2.99	0.85
Provides: doc. H	Provides: doc. PaedDr. Renáta Orosová, PhD., PaedDr. Janka Ferencová, PhD.				
Date of last mo	dification: 08.06	5.2021			
Approved:					

University: P. J. Šafá	irik University in Košice					
Faculty: Faculty of S	Science					
Course ID: ÚTVŠ/ ÚTVŠ/CM/13	Course ID: ÚTVŠ/       Course name: Seaside Aerobic Exercise         UTVŠ/CM/13       Image: Seaside Aerobic Exercise					
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: Per study period: 36s Course method: combined, present						
Number of ECTS cr	redits: 2					
Recommended seme	ester/trimester of the cours	e:				
Course level: I., II.						
Prerequisities:						
Conditions for course completion: Conditions for course completion: Attendance						
Learning outcomes: Students will be provided an overview of possibilities how to spend leisure time in seaside conditions actively and their skills in work and communication with clients will be improved. Students will acquire practical experience in organising the cultural and art-oriented events, with the aim to improve the stay and to create positive experiences for visitors.						
<ul> <li>Brief outline of the course:</li> <li>Brief outline of the course:</li> <li>1. Basics of seaside aerobics</li> <li>2. Morning exercises</li> <li>3. Pilates and its application in seaside conditions</li> <li>4. Exercises for the spine</li> <li>5. Yoga basics</li> <li>6. Sport as a part of leisure time</li> <li>7. Application of projects of productive spending of leisure time for different age and social groups (children, young people, elderly)</li> <li>8. Application of seaside cultural and art-oriented activities in leisure time</li> </ul>						
Recommended literature:						
Course language:						
Notes:						
<b>Course assessment</b> Total number of asse	essed students: 41					
	abs	n				
	12.2	87.8				

Provides: Mgr. Agata Horbacz, PhD.

Date of last modification: 15.03.2019

University: P. J.	Šafárik Univers	ity in Košice			
Faculty: Faculty	y of Science				
Course ID: KF/ VKFV/07	e ID: KF/ Course name: Selected Topics in Philosophy of Education (General Introduction)				
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present					
Number of EC	<b>FS credits:</b> 2				
Recommended	semester/trimes	ter of the cours	<b>e:</b> 3., 5.		
Course level: I.	Course level: I.				
Prerequisities: KF/DF1/05					
Conditions for course completion:					
Learning outco	Learning outcomes:				
Brief outline of	the course:				
Recommended literature:					
Course languag	ge:				
Notes:					
Course assessm Total number of	ent f assessed studen	ts: 0			
А	В	С	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
Provides: doc. PhDr. Pavol Tholt, PhD., mim. prof.					
Date of last mo	dification:				
Approved:					

University:	Ρ	J	Šafárik	University	/ in	Košice
University.	т.	J.	Salarin	Oniversit	/ 111	IXUSICC

Faculty: Faculty of Science

Course ID: ÚCHV/	Course name: Separation Methods
ASM/03	

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.

**Prerequisities:** (ÚCHV/ANCHU/03 and leboÚCHV/ANCHE/09 and leboÚCHV/ANCH1b/03), (ÚCHV/PAEC/03 and leboÚCHV/PANCH/06 and leboÚCHV/PANCHE/09 and leboÚCHV/PACU/03)

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

Preparation and presentation of a project focused on the application of separation methods. Examination.

### Learning outcomes:

Survey of basic principles, theoretical background and applications of separation methods in research and analytical practice.

### Brief outline of the course:

Basic principles, classification, theory and applications of separation methods. Extraction - LLE, SPE, SPME. Chromatographic methods - theory, classification. Gas chromatography, retention mechanisms, stationary phases and their selection. Instrumentation, detectors in GC. Data evaluation - qualitative and quantitative analysis. High-performance liquid chromatography, principles, classification. Stationary and mobile phases in LC, instrumentation. Applications. Comparison of GC and HPLC methods.

Planar chromatographic methods - TLC, HPTLC, PC.

Electrophoretic techniques - CE, ITP, HPCE. MEKC - micellar electrokinetic capillary chromatography. Lab-on-a-Chip (LOC), TAS, electrophoresis on a chip, principles and applications.

# **Recommended literature:**

Krupčík, J.: Separačné metódy, SVŠT CHTF, Bratislava 1983.

Skoog D. A., Leary J. J.: Principles of instrumental analysis. Saunders College Publishing, New York 1997.

Pawliszyn J., Lord H. L.: Handbook of sample preparation, Wiley 2010.

Churáček J., Jandera P.: Úvod do vysokoúčinné kapalinové chromatografie, SNTL, Praha 1984.

# Course language:

Notes:

Course assessment Total number of assessed students: 473									
A B C D E FX									
27.06	27.06 25.79 26.0 13.11 5.71 2.33								
Provides: doc.	Provides: doc. RNDr. Taťána Gondová, CSc.								
Date of last modification: 21.04.2021									
Approved:									

University: P. J. Šafárik University in Košice								
Faculty: Facult	Faculty: Faculty of Science							
Course ID: KP SPKVV/15	Course ID: KPO/ SPKVV/15Course 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 EC	TS credits: 2							
Recommended	semester/trimes	ster of the cours	<b>e:</b> 4., 6.					
Course level: I.								
Prerequisities:								
<b>Conditions for</b>	course completi	ion:						
Learning outco	omes:							
Brief outline of	the course:							
Recommended	literature:							
Course languag	ge:							
Notes:								
Course assessment Total number of assessed students: 57								
A	A B C D E FX							
31.58 36.84 19.3 10.53 1.75 0.0								
Provides: Mgr. Ján Ruman, PhD.								
Date of last modification: 13.05.2021								
Approved:								

University: P. J. Šafărik University in Košice Faculty: Faculty of Science Course ID: ÚINF/ Course name: Software engineering SWI1a/15 Course type, scope and the method: Course type, scope and the method: Course type. Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present Number of ECTS credits: 2 Recommended semester/trimester of the course: 4. Course level: 1. Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15 Conditions for course completion: Learning outcomes: To provide information concerning the principal activities related to the development of software products. Brief outline of the course: System, subsystem, software system. Software processes. Introduction to project management. Requirements gathering. Software modeling. Software architectures. Software development methodologies. Verification and validation. Resource management. Recommended literature: 1. BERKUN, S. The Art Of Project Management. O Reilly, 2005. 2. BJORNER, D. Software engineering. L,2,3. Springer-Verlag Berlin, 2006. 3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007. Course language: Notes: Course assessment Total number of assessed students; 313 A B C D E FX 18.21 23.0 20.13 17.57 19.81 1.28 Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Approved:										
Faculty: Faculty of Science         Course ID: ÚINF/       Course name: Software engineering         SWI1a/15       Course name: Software engineering       Course type; scope and the method:         Course type: Practice       Recommended course-load (hours):       Pereveck: 2 Per study period: 28         Course method: present       Course nethod: present       Course level: 1.         Perequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15       Course level: I.         Perequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15       Course management.         Course information concerning the principal activities related to the development of software products.       Software modeling. Software processes. Introduction to project management.         Recommended literature:       I. Seftware modeling. Software architectures. Software development methodologies. Verification and validation. Resource management.         Recommended literature:       I. BERKUN, S. The Art Of Project Management. O Reilly, 2005.       2. BJORNER, D. Software engineering 1.2,3. Springer-Verlag Berlin, 2006.       3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007.         Course assessment       Total number of assessed students: 313       Total number of assessed students: 313         A       B       C       D       E       FX         18:21       23.0       20.13       17.57       19.81       1.28         Prov	University: P. J.	Šafárik Univers	sity in Košice							
Course ID: ÚINF/       Course name: Software engineering         SWI1a/15       Course type, scope and the method:         Course type: Practice       Recommended course-load (hours):         Per week: 2 Per study period: 28       Course method: present         Number of ECTS credits: 2       Recommended semester/trimester of the course: 4.         Course level: 1.       Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15         Conditions for course completion:       Learning outcomes:         To provide information concerning the principal activities related to the development of software products.         Brief outline of the course:       Software modeling. Software architectures. Software development methodologies. Verification and validation. Resource management.         Recommended literature:       1. BERKUN, S. The Art Of Project Management. O Reilly, 2005.         2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006.       3. SOMMERVILLE, I. Software Engineering . Addison-Wesley, 2007.         Course language:       Notes:         Course assessment       Total number of assessed students: 313         A       B       C       D       E       FX         18.21       23.0       20.13       17.57       19.81       1.28         Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.       Date of last modification: 03.05.2015       Approved: <td>Faculty: Faculty</td> <td>of Science</td> <td></td> <td></td> <td></td> <td></td>	Faculty: Faculty	of Science								
Course type, scope and the method:         Course type: Practice         Recommended course-load (hours):         Per week: 2 Per study period: 28         Course method: present         Number of ECTS credits: 2         Recommended semester/trimester of the course: 4.         Course level: I.         Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15         Conditions for course completion:         Learning outcomes:         To provide information concerning the principal activities related to the development of software products.         Brief outline of the course:         System, subsystem, software system. Software processes. Introduction to project management.         Recommended literature:         1. BERKUN, S. The Art Of Project Management. O Reilly, 2005.         2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006.         3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007.         Course language:         Notes:         Course assessment         Total number of assessed students: 313         A       B       C       D       E       FX         18.21       23.0       20.13       17.57       19.81       1.28         Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.         Date of last modifi	<b>Course ID:</b> ÚIN SWI1a/15	Course ID: ÚINF/ Course name: Software engineering SWI1a/15								
Number of ECTS credits: 2         Recommended semester/trimester of the course: 4.         Course level: 1.         Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15         Conditions for course completion:         Learning outcomes:         To provide information concerning the principal activities related to the development of software products.         Brief outline of the course:         System, subsystem, software system. Software processes. Introduction to project management.         Requirements gathering. Software modelilng. Software architectures. Software development methodologies. Verification and validation. Resource management.         Recommended literature:         1. BERKUN, S. The Art Of Project Management. O Reilly, 2005.         2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006.         3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007.         Course language:         Notes:         Course assessment         Total number of assessed students: 313         A       B       C       D       E       FX         18.21       23.0       20.13       17.57       19.81       1.28         Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.       Date of last modification: 03.05.2015         Approved:       Veroved:       Veroved:	Course type, sco Course type: P Recommended Per week: 2 Pe Course method	ppe and the me ractice course-load (h r study perioda l: present	thod: ours): 28							
Recommended semester/trimester of the course: 4.         Course level: I.         Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15         Conditions for course completion:         Learning outcomes:         To provide information concerning the principal activities related to the development of software products.         Brief outline of the course:         System, subsystem, software system. Software processes. Introduction to project management.         Requirements gathering. Software modeling. Software architectures. Software development methodologies. Verification and validation. Resource management.         Recommended literature:         1. BERKUN, S. The Art Of Project Management. O Reilly, 2005.         2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006.         3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007.         Course assessment         Total number of assessed students: 313         A       B       C       D       E       FX         18.21       23.0       20.13       17.57       19.81       1.28         Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.         Date of last modification: 03.05.2015         Approved:	Number of ECT	S credits: 2								
Course level: I.         Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15         Conditions for course completion:         Learning outcomes:         To provide information concerning the principal activities related to the development of software products.         Brief outline of the course:         System, subsystem, software system. Software processes. Introduction to project management.         Requirements gathering. Software modelilng. Software architectures. Software development methodologies. Verification and validation. Resource management.         Recommended literature:         1. BERKUN, S. The Art Of Project Management. O Reilly, 2005.         2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006.         3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007.         Course language:         Notes:         Course assessment         Total number of assessed students: 313         A         A         A         Provide: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.         D         Let FX         18.21       23.0       20.13       17.57       19.81       1.28 <td< td=""><td>Recommended s</td><td>semester/trime</td><td>ster of the course</td><td><b>e:</b> 4.</td><td></td><td></td></td<>	Recommended s	semester/trime	ster of the course	<b>e:</b> 4.						
Prerequisities: ÚINF/DBS1a/15 and leboÚINF/DBdi/15         Conditions for course completion:         Learning outcomes:         To provide information concerning the principal activities related to the development of software products.         Brief outline of the course:         System, subsystem, software system. Software processes. Introduction to project management.         Requirements gathering. Software modelilng. Software architectures. Software development methodologies. Verification and validation. Resource management.         Recommended literature:         1. BERKUN, S. The Art Of Project Management. O Reilly, 2005.         2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006.         3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007.         Course language:         Notes:         Course assessment         Total number of assessed students: 313         A       B       C       D       E       FX         18.21       23.0       20.13       17.57       19.81       1.28         Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.       Date of last modification: 03.05.2015         Approved:       Vapproved:       Vapproved:	Course level: I.									
Conditions for course completion:         Learning outcomes:         To provide information concerning the principal activities related to the development of software products.         Brief outline of the course:         System, subsystem, software system. Software processes. Introduction to project management.         Requirements gathering. Software modelling. Software architectures. Software development methodologies. Verification and validation. Resource management.         Recommended literature:         1. BERKUN, S. The Art Of Project Management. O Reilly, 2005.         2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006.         3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007.         Course language:         Notes:         Course assessment         Total number of assessed students: 313         A       B       C       D       E       FX         18.21       23.0       20.13       17.57       19.81       1.28         Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.       Date of last modification: 03.05.2015         Approved:       Vertication:       Vertication: 03.05.2015	Prerequisities: (	JINF/DBS1a/15	and leboÚINF/D	Bdi/15						
Learning outcomes:         To provide information concerning the principal activities related to the development of software products.         Brief outline of the course:         System, subsystem, software system. Software processes. Introduction to project management.         Requirements gathering. Software modelilng. Software architectures. Software development methodologies. Verification and validation. Resource management.         Recommended literature:         1. BERKUN, S. The Art Of Project Management. O Reilly, 2005.         2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006.         3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007.         Course language:         Notes:         Course assessment         Total number of assessed students: 313         A       B       C       D       E       FX         18.21       23.0       20.13       17.57       19.81       1.28         Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.       Date of last modification: 03.05.2015         Approved:       Value       Value       Value	Conditions for c	ourse complet	ion:							
Brief outline of the course:         System, subsystem, software system. Software processes. Introduction to project management.         Requirements gathering. Software modelilng. Software architectures. Software development methodologies. Verification and validation. Resource management.         Recommended literature:         1. BERKUN, S. The Art Of Project Management. O Reilly, 2005.         2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006.         3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007.         Course language:         Notes:         Course assessment         Total number of assessed students: 313         A       B         C       D       E         18.21       23.0       20.13       17.57         18.21       23.0       20.13       17.57       19.81       1.28         Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.       Date of last modification: 03.05.2015         Approved:       Course       Course       Course	Learning outcom To provide infor products.	nes: mation concern	ing the principal	activities related	d to the developm	ent of software				
Recommended literature:         1. BERKUN, S. The Art Of Project Management. O Reilly, 2005.         2. BJORNER, D. Software engineering 1,2,3. Springer-Verlag Berlin, 2006.         3. SOMMERVILLE, I. Software Engineering. Addison-Wesley, 2007.         Course language:         Notes:         Course assessment         Total number of assessed students: 313         A       B       C       D       E       FX         18.21       23.0       20.13       17.57       19.81       1.28         Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.         Date of last modification: 03.05.2015	System, subsyst Requirements g methodologies.	em, software s athering. Softw Verification and	ystem. Software j vare modelilng. validation. Resou	processes. Intro Software archi irce managemen	duction to project tectures. Softwar nt.	et management. re development				
Course language:         Notes:         Course assessment         Total number of assessed students: 313         A       B       C       D       E       FX         18.21       23.0       20.13       17.57       19.81       1.28         Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.       Date of last modification: 03.05.2015       Approved:	Recommended I 1. BERKUN, S. 2. BJORNER, D 3. SOMMERVII	<b>iterature:</b> The Art Of Pro Software engi LLE, I. Software	ject Management. neering 1,2,3. Spr e Engineering. Ac	O Reilly, 2005 inger-Verlag Be ldison-Wesley, 2	erlin, 2006. 2007.					
Notes:Course assessmentTotal number of assessed students: 313ABCDEFX18.2123.020.1317.5719.811.28Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.Date of last modification: 03.05.2015Approved:	Course language	e:								
Course assessment Total number of assessed students: 313ABCDEFX18.2123.020.1317.5719.811.28Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.Date of last modification: 03.05.2015Approved:	Notes:									
ABCDEFX18.2123.020.1317.5719.811.28Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.Date of last modification: 03.05.2015Approved:	Course assessment Total number of assessed students: 313									
18.2123.020.1317.5719.811.28Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD.Date of last modification: 03.05.2015Approved:	A	A B C D E FX								
Provides: prof. RNDr. Gabriel Semanišin, PhD., Mgr. Alexander Szabari, PhD. Date of last modification: 03.05.2015 Approved:	18.21	23.0	20.13	17.57	19.81	1.28				
Date of last modification: 03.05.2015 Approved:	Provides: prof. F	RNDr. Gabriel S	emanišin, PhD., I	Mgr. Alexander	Szabari, PhD.					
Approved:	Date of last mod	lification: 03.03	5.2015							
	Approved:									

University: P. J	. Šafárik Univers	ity in Košice						
Faculty: Facult	Faculty: Faculty of Science							
Course ID: KG OJPV1/07	Course ID: KGER/ Course name: Specialised German Language - Natural Sciences 1 OJPV1/07							
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	ope and the met Practice d course-load (h er study period: d: present	thod: ours): 28						
Number of EC	TS credits: 2							
Recommended	semester/trimes	ster of the cours	<b>e:</b> 4.					
Course level: I.								
Prerequisities:								
<b>Conditions for</b>	course completi	on:						
Learning outco	omes:							
Brief outline of	the course:							
Recommended	literature:							
Course languag	ge:							
Notes:								
Course assessm Total number of	Course assessment Total number of assessed students: 144							
А	В	С	D	Е	FX			
23.61 22.92 24.31 20.83 7.64 0.69								
Provides: Mgr. Blanka Jenčíková								
Date of last mo	Date of last modification: 03.05.2015							
Approved:								

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

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

# **Recommended literature:**

# **Course language:**

Notes:

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

University:	University: P. J. Šafárik University in Košice									
Faculty: Fa	Faculty: Faculty of Science									
<b>Course ID:</b> TVb/11	Course ID: ÚTVŠ/ Course name: Sports Activities II. TVb/11									
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	Number of ECTS credits: 2									
Recommen	ded semeste	er/trimester	of the cours	<b>e:</b> 2.						
Course leve	el: I., I.II., II	•								
Prerequisit	ies:									
Conditions active parti	for course of cipation in c	<b>completion:</b> lasses - min.	80%.							
<b>Learning outcomes:</b> Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.										
<b>Brief outline of the course:</b> Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.										
Recommended literature:										
Course language:										
Notes:	Notes:									
Course asse Total numb	Course assessment Total number of assessed students: 11675									
abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs			
84.52	0.56	0.02	0.0	0.0	0.05	10.63	4.22			

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

Date of last modification: 13.05.2021

University: F	University: P. J. Šafárik University in Košice								
Faculty: Facu	Faculty: Faculty of Science								
<b>Course ID:</b> Ú TVc/11	Course ID: ÚTVŠ/ TVc/11Course 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: combined, present									
Number of ECTS credits: 2									
Recommend	ed semeste	r/trimester	of the cours	<b>e:</b> 3.					
Course levels	<b>:</b> I., I.II., II.								
Prerequisitie	es:								
<b>Conditions fo</b> min. 80% of	or course c active parti	<b>completion:</b>	lasses						
Learning outcomes: Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.									
<b>Brief outline of the course:</b> Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.									
Recommended literature:									
Course language:									
Notes:									
Course assessment Total number of assessed students: 7873									
abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs		
88.8	0.05	0.01	0.0	0.0	0.03	4.08	7.04		

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

Date of last modification: 13.05.2021

University: P. J. Šafárik University in Košice									
Faculty: Faculty of Science									
Course ID: TVd/11	Course ID: ÚTVŠ/       Course name: Sports Activities IV.         TVd/11								
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									
Recommend	led semeste	er/trimester	of the cours	<b>e:</b> 4.					
Course level	<b>I:</b> I., I.II., II.								
Prerequisiti	es:								
<b>Conditions</b> f min. 80% of	<b>for course c</b> f active parti	completion: icipation in c	classes						
<b>Learning outcomes:</b> Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.									
<b>Brief outline of the course:</b> Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.									
Recommended literature:									
Course language:									
Notes:	Notes:								
Course asse Total numbe	Course assessment Total number of assessed students: 5125								
abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs		
83.14	0.31	0.04	0.0	0.0	0.0	7.75	8.76		

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

Date of last modification: 13.05.2021

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

**Course ID:** ÚCHV/ **Course name:** Structure determination - spectroscopic methods MUSU/15

Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 3 Per study period: 28 / 42

Course method: present

Number of ECTS credits: 7

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚCHV/ACHU/03,ÚCHV/ANCHU/03,ÚCHV/OCHU/03

Conditions for course completion:

Learning outcomes:

### Brief outline of the course:

Fundamentals of molecular spectroscopy and magnetic properties study, as powerful tools for structure determination in chemistry. Those are ultraviolet, visible, infrared and Raman spectroscopy, mass spectrometry and methods based on magnetic resonance (1H NMR, 13C NMR).

### **Recommended literature:**

L.G.Wade,Jr.: Organic Chemistry. Prentice Hall International, Inc. Englewood Cliffs, New Yersey 1995.

### **Course language:**

Notes:

### Course assessment

Total number of assessed students: 158

А	В	С	D	Е	FX
14.56	34.81	31.01	17.09	2.53	0.0

**Provides:** doc. RNDr. Ján Imrich, CSc., RNDr. Monika Tvrdoňová, PhD., doc. RNDr. Juraj Kuchár, PhD.

Date of last modification: 04.02.2020

University: P. J.	Šafárik Univers	ity in Košice					
Faculty: Faculty	y of Science						
<b>Course ID:</b> ÚIN SXM1/15	VF/ Course na	me: Structure fo	ormats and repre	sentation of data			
Course type, sc Course type: F Recommended Per week: 2 Pe Course metho	ope and the met Practice I course-load (h er study period: d: present	thod: ours): 28					
Number of EC	<b>FS credits:</b> 2						
Recommended	semester/trimes	ster of the cours	<b>e:</b> 5.				
Course level: I.							
Prerequisities:							
<b>Conditions for</b> Evaluation of pa Evaluation of m	<b>course completi</b> artial assignment nultiple assignme	on: s within larger p nts correspondin	roject. g to learning blo	ocks.			
Learning outco Become ackno semistructured	<b>mes:</b> wledged with data. Acquire pro	theoretical conc ogramming skills	epts and meth with implement	odologies with tations of these co	structured and ncepts.		
Brief outline of Representation parsers: DOM, S Schema. Addre for semistructur (YAML), JAXE	the course: of semi-structur SAX, StAX. Java ssing in XML: X ed data: JSON, Y B (XML).	ed data in XML a API of XML pa Path. Transform AML. API for da	, valid and wel rsers. Schemas f ations of XML o ta binding in Jay	l-formed XML de for XML documer documents: XSLT /a: Jackson (JSON	ocument. XML hts: DTD, XML ? Other formats I), SnakeYAML		
Recommended 1. Eliotte "Rust 2. Grigoris Anto 2008. ISBN 978 3. Michaek Kay 978-076456909	literature: y" Harold. XML oniou, Frank Van 8-0262012423. 7. XSLT 2.0 Prog	Bible, Gold Edit Harmelen. A Se rammer's Refere	tion. Wiley, 200 emantic Web Prin nce, 3rd Edition	1. ISBN 978-0764 mer, Second Editi . Wrox, 2004. ISE	548192. on. MIT Press, BN:		
Course languag	ge:						
Notes:							
Course assessm Total number of	ent f assessed studen	ts: 73					
А	В	С	D	Е	FX		
32.88	21.92	20.55	13.7	10.96	0.0		
Provides: Mgr.	Alexander Szaba	ri, PhD.	l	<u> </u>			
Date of last mo	dification: 01.06	5.2015					
University: P. J	. Šafárik Univers	ity in Košice					
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Faculty: Facult	y of Science						
Course ID: ÚC SVK/00	Course ID: ÚCHV/ Course name: Students Scientific Conference (Presentation) SVK/00						
Course type, sc Course type: Recommended Per week: Per Course metho	ope and the met d course-load (h r study period: d: present	thod: ours):					
Number of EC	TS credits: 4						
Recommended	semester/trimes	ster of the cours	e:				
Course level: I.	, II.						
Prerequisities:							
Conditions for	course completi	on:					
Learning outcomes:							
Brief outline of	the course:						
Recommended	literature:						
Course languag	ge:						
Notes:							
Course assessment Total number of assessed students: 36							
A B C D E FX							
100.0 0.0 0.0 0.0 0.0 0.0							
Provides:							
Date of last modification: 03.05.2015							
Approved:							

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> ÚMV/ DGS/15	Course name: Students` Digital Literacy
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course: 1.
Course level: I.	
Prerequisities:	
Conditions for cours continuous assessmen	e completion: nt and final project
competencies with er acquire basic digital social media, online for better and more er and further career pro-	mphasis on the area of communication, social interaction and personal. To skills for working with advanced technologies (mobile phone, tablet, laptop, webtechnologies). To understand the value of existing advanced technologies effective learning, work and active life in higher education, lifelong learning ospects.
Brief outline of the c Introduction to the pro- online information so books). Tools for col- and visualization. To Google Drive, Youtu collaborative activitie evaluation of digital p	ourse: oblems of current, commonly available digital technology. Tools for access to ource (mobile applications for access to information systems, databases, data llecting, generating direct information and data and its subsequent analysis ools for providing and sharing of electronic content (cloud technology - be, Google+, Skydrive, Dropbox). Tools for communication, discussion and es. Legal work with digital technologies and resources, plagiarism, critical resources. Security, privacy, digital ethics and etiquette, digital citizenship.
Recommended litera 1. Bruff, D. (2009). T environments. San Fr 2. Byrne, R. (2012). C 3. Kawasaki, G. (201 4. Kolb, L. (2011). C Society for Technolog	Ature: Yeaching with classroom response systems: Creating active learning rancisco: Jossey-Bass. Google Drive and Docs for Teachers. Free Tech for Teachers. 2). What the Plus! Google+ for the Rest of Us. Amazon igital Services. ell Phones in the Classroom: A Practical Guide for Educators. International gy in Education.
<b>Course language:</b> Slovak	
Notes:	

Course assessment Total number of assessed students: 250						
abs	n					
96.0	4.0					
<b>Provides:</b> doc. RNDr. Stanislav Lukáč, PhD., doc. RNDr. Jozef Hanč, PhD., doc. RNDr. Ľubomír Šnajder, PhD.						
Date of last modification: 03.05.2015						
Approved:						

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

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

University: P. J. Šafár	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> ÚTVŠ/ KP/12	Course name: Survival Course
Course type, scope a Course type: Practic Recommended cour Per week: Per stud Course method: cor	nd the method: ce rse-load (hours): y period: 36s mbined, present
Number of ECTS cro	edits: 2
Recommended seme	ster/trimester of the course:
Course level: I., II.	
Prerequisities:	
<b>Conditions for cours</b> Conditions for course Attendance Final assessment: cor	e completion: completion: ntinuous fulfilment of all tasks within the course
Learning outcomes: Learning outcomes: Students will be fan conditions as they wi and demanding situa course develops team require overcoming o	niliarized with principles of safe stay and movement in extreme natural ll obtain theoretical knowledge and practical skills to solve the extraordinary tions connected with survival and minimization of damage to health. The n work and students will learn how to manage and face the situations that of obstacles.
<ul> <li>Brief outline of the c Brief outline of the co Lectures:</li> <li>1. Principles of behave</li> <li>2. Preparation and leat</li> <li>3. Objective and subjing</li> <li>4. Principles of hygiene</li> <li>Exercises:</li> <li>1. Movement in terrational</li> <li>2. Preparation of imp</li> <li>3. Water treatment and</li> </ul>	ourse: burse: viour and safety for movement and stay in unknown mountains adership of tour ective danger in mountains ne and prevention of damage to health in extreme conditions in, orientation and navigation in terrain (compasses, GPS) rovised overnight stay d food preparation.
Recommended litera	ture:
Course language:	
Notes:	

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

University: P. J.	University: P. J. Šafárik University in Košice						
Faculty: Faculty	Faculty: Faculty of Science						
<b>Course ID:</b> ÚIN SLO1a/15	Course ID: ÚINF/ Course name: Symbolic logic SLO1a/15						
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present							
Number of EC	<b>FS credits:</b> 5						
Recommended	semester/trimes	ster of the course	e: 6.				
Course level: I.	, II.						
Prerequisities:							
Conditions for	course completi	on:					
Learning outco To understand provability, satis	<b>Learning outcomes:</b> To understand basic notions of sentence and predicate logic - sentence, sentence scheme, provability, satisfiability, term, formula.						
<b>Brief outline of the course:</b> Predicate logic – logic language, syntax and semantics, term, formula. Axioms, proof, provability. Interpretation, truth, model. Correctness of the predicate logic.							
Recommended literature: GOLDSTERN M., JUDAH H.: The Incompleteness Phenomenon, A New Course in Mathematical Logic, A K Peters, Wellesley, Massachusetts, 1995 http://cs.ics.upjs.sk/~krajci/skola/vyucba/ucebneTexty/logika/logika.pdf							
Course languag	ge:						
Notes:							
Course assessment Total number of assessed students: 405							
А	A B C D E FX						
25.43 10.12 12.59 11.36 27.16 13.33							
Provides: prof. RNDr. Stanislav Krajči, PhD., doc. RNDr. Ondrej Krídlo, PhD.							
Date of last mo	Date of last modification: 03.05.2015						
Approved:							

University: P. J.	. Šafárik Univers	ity in Košice				
Faculty: Faculty	y of Science					
Course ID: KPI TVE/08	E/ <b>Course na</b>	me: Theory of I	Education			
Course type, sc Course type: I Recommended Per week: 2 Pe Course metho	ope and the met Practice I course-load (h er study period: d: present	thod: ours): 28				
Number of EC	<b>FS credits:</b> 2					
Recommended	semester/trimes	ster of the cours	<b>e:</b> 4., 6.			
Course level: I.						
Prerequisities:						
Conditions for	course completi	on:				
Learning outco	mes:					
Brief outline of	the course:					
Recommended	literature:			-		
Course languag	ge:					
Notes:						
Course assessm Total number of	ent f assessed studen	ts: 501				
A B C D E FX						
36.93 32.93 20.36 5.99 1.6 2.2						
Provides: Mgr.	Katarína Petríko	vá, PhD.	<u>I</u>		<u>I</u>	
Date of last mo	dification: 08.06	5.2021				
Approved:						

<b>COURSE INFORMATION LETTER</b>						
University: P. J. Šafárik University in Košice						
Faculty: Faculty of Science						
<b>Course ID:</b> ÚINF/ TYS1/15	Course name: Typographical systems					
Course type, scope a Course type: Practi Recommended cou Per week: 2 Per stu Course method: pr	and the method: ce rse-load (hours): ady period: 28 esent					
Number of ECTS cr	redits: 2					
Recommended seme	ester/trimester of the course: 6.					
Course level: I.						
Prerequisities:						
Conditions for cours	se completion:					
Learning outcomes: To provide the ba mathematical formul	sic information on principles for typesetting of documents containing as in Plain TeX, AMS-TeX, and LaTeX.					
Brief outline of the of Typesetting of a plain text and footnote com of mathematical form Making tables and Contents, bibliograph	<b>course:</b> In text, special text symbols, using of text fonts. TeX macros. Enumerations in nmand. Parameter setting determining the appearance of the pages. Typesetting nulas in text and displays, aligning formulas. Definitions of TeX macros. pictures. Definitions, theorems, and proofs in a mathematical document. hy, sections in a document.					
Recommended litera 1. D. E. Knuth, The ' Massachusetts, 1986 2. M. Doob, Jemný ú TeX'' (text vo <sup>3</sup> /4ne pr 3. O. Ulrych, AMS-T 4. J. Chlebíková, AM 5. M. Spivak, The Jo 6. L. Lamport, LaTez 7. L. Lamport, Make 8. J. Rybièka, LaTeX 9. H. Partl, E. Schleg 10. T. Oetiker, H. Pa systému LaTeX2e (n 11. M. Goossens, F. 1)	<ul> <li>ature:</li> <li>TeXbook, Computers and Typesetting, Addison-Wesley, Reading,</li> <li>ivod do TeXu, CSTUG, 1990; èeský preklad z "A Gentle Introduction to ístupný v CTAN archíve).</li> <li>TeX za 59 minút, (verzia 1.0), Praha, 1989.</li> <li>TeX (verzia 2.0), Bratislava, 1992.</li> <li>ivo of TeX, Amer. Math. Soc., 1986.</li> <li>X: A Document Preparation System, Addison-Wesley, Massachusetts, 1986.</li> <li>Index: An index processor for LaTeX, 17 February 1987.</li> <li>Ipro začátečníky, Konvoj, Brno, 1995.</li> <li>I, I. Hyna, P. Sýkora, LaTeX – Stručný popis.</li> <li>rtl, I. Hyna, E. Schlegl, M. Kocer, P. Sýkora, Ne příliš stručný úvod do eboli LaTeX2e v 73 minutách).</li> <li>Mittelbach, and A. Samarin, The LaTeX Companion, Addison-Wesley,</li> </ul>					

# **Course language:** Slovak or english

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