# CONTENT

1. 1D & 2D NMR Spectroscopy	2
2. Analysis of Psychotropic and Narcotic Substances	4
3. Analysis of drugs	5
4. Analytical Chemistry	6
5. Analytical Chemistry III	8
6. Atomic Spectrochemistry	
7. Basics of electroanalytical methods	12
8. Bioanalytical Chemistry	14
9. Chemometrics	16
10. Class Project	
11. Diploma Thesis and its Defence	20
12. Electrophoretic Methods	21
13. Environmental Analytical Chemistry	
14. Experimental Methods to Master's Thesis	
15. Forensic and Clinical Analytical Chemistry	
16. Green analytical chemistry: miniaturization, automation, sensors	
17. Hydrochemistry	
18. Liquid Chromatography	
19. Methodology of Science 1	
20. Molecular Spectrometry	
21. Philosophical Antropology	
22. Practical in Bioanalytical Chemistry	
23. Sampling of Analytical Samples	40
24. Seaside Aerobic Exercise	
25. Selected Topics in Philosophy of Education (General Introduction)	
26. Selected chapters of analytical chemistry	44
27. Semestral Project I	
28. Semestral Project II	
29. Semestral Project III.	49
30. Seminar to Diploma Thesis	
31. Special Seminar	52
32. Special Seminar	53
33. Sports Activities I	54
34. Sports Activities II	56
35. Sports Activities III	58
36. Sports Activities IV	60
37. Students Scientific Conference (Presentation)	
38. Summer Course-Rafting of TISA River	63
39. Survival Course	65
40. Water Pretreatment	67

	COURSE INFORMATION LETTER
University: P. J. Šafán	ik University in Košice
Faculty: Faculty of So	cience
Course ID: ÚCHV/ NMR1/00	Course name: 1D & 2D NMR Spectroscopy
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 3 Per s Course method: pre	nd the method: e / Practice rse-load (hours): study period: 28 / 42 sent
Number of ECTS cro	edits: 6
Recommended semes	ster/trimester of the course: 2.
Course level: II.	
Prerequisities:	
<ul> <li>Conditions for cours</li> <li>1. Attendance at lecture</li> <li>2. Activity at seminal students for all semine</li> <li>3. Elaboration of wr instructions.</li> <li>4. Passing the final tee</li> <li>5. Exam (written 25%)</li> </ul>	e completion: res and seminars (this also applies to the online form of teaching) rs (also applies to the online form of teaching) - theoretical preparation of ars is required itten assignments (20% of the total evaluation) according to the teacher's st (30% of the total evaluation). 6 and oral part 25%).
<b>Learning outcomes:</b> The aim of the course the acquired knowled	e is to get acquainted with 1D and 2D NMR methods and the application of ge in solving NMR problems.
Brief outline of the contrast	A methods ents – APT, DEPT nts elation through coupling – COSY, TOCSY elation through space - NOESY elation – HSQC/HMQC/HETCOR, HMBC, H2BC, EXSIDE relation - INADEQUATE
Recommended litera 1. H. Friebolin: Basic 2. T. D. W. Claridge: 2016. 3. Atta-ur-Rahman, N Press 1996.	ture: One- and Two-Dimensional NMR Spectrocopy, 5. Ed., Wiley, 2010. High-Resolution NMR Techniques in Organic Chemistry, 5. Ed., Elsevier, 1. I. Choudhary: Solving Problems with NMR spectroscopy, Academic
Course language:	

## Notes:

Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.

# Course assessment

Total number of assessed students: 193					
А	В	С	D	Е	FX
40.41	25.39	23.83	8.81	1.55	0.0
Provides: doc. RNDr. Mária Vilková, PhD.					
Date of last modification: 28.01.2022					

University P I	Šafárik Univers	ity in Košice			
Faculty: Faculty	of Science				
Course ID: ÚCH APO1/02	Course ID: ÚCHV/ Course name: Analysis of Psychotropic and Narcotic Substances				
Course type, sco Course type: L Recommended Per week: 2 Pe Course method	ope and the met ecture course-load (h r study period: l: present	thod: ours): 28			
Number of ECT	S credits: 4				
Recommended s	semester/trimes	ster of the course	e: 3.		
Course level: II.					
Prerequisities:					
<b>Conditions for c</b> Examination	course completi	on:			
Learning outcom Survey of classif drug dependence	mes: fication, effects/n es and methods	nechanism and pr used in the (toxic	operties of psycological) analys	chotropic and narc sis of drugs.	otic substances,
Brief outline of Drug, drug dep laws. Dose and biotransformatic analysis) - opiate etc.	the course: endence. Psych tolerance, thera ons, receptors. T es, cocaine, ampl	otropic and narc py, prevention. P The methods used hetamines and the	otic substances harmacokinetic l in the analysi ir analogues, ha	s - classification, cs of the drug. Big is of the drugs (c allucinogenics, car	properties and ological effects, linical, forensic mabis products,
Recommended I 1. M. D. Cole: T 2. E. Hodgson: A	l <b>iterature:</b> The Analysis of ( A Textbook of M	Controlled Substa Iodern Toxicolog	nces, Wiley 20 y, Wiley 2004.	03.	
Course languag	e:				
Notes:					
Course assessment Total number of assessed students: 264					
A	В	С	D	Е	FX
94.32	3.79	1.52	0.38	0.0	0.0
Provides: doc. RNDr. Taťána Gondová, CSc.					
Date of last mod	Date of last modification: 15.11.2021				
Approved: prof.	Dr. Yaroslav Ba	azel', DrSc.			
-					

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
<b>Course ID:</b> ÚCHV/ ANAL/18	Irse ID: ÚCHV/ Course name: Analysis of drugs AL/18				
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present					
Number of ECTS cr	edits: 5				
Recommended seme	ster/trimester of the cours	e:			
Course level: II.					
Prerequisities:					
<b>Conditions for cours</b> Assessment, based or points is required for	e completion: a 3 prepared presentations or completion.	n specified topics (3x10 points), a minimum of 20			
Learning outcomes: Survey of basic principles, methods and new trends in drugs analysis.					
<ul> <li>Brief outline of the course:</li> <li>Analysis of chemical drugs, control and evaluation of drug quality, Slovak and European Pharmacopoeia.</li> <li>Determination of drug content, classical methods of determination - proof reactions of ions, etc.</li> <li>Solid state drug analysis, impurity analysis, drug degradation, stability study. Sample preparation, cleaning and extraction procedures. Methods used in drug analysis, optical and separation methods.</li> <li>Validation of analytical methods</li> </ul>					
<b>Recommended literature:</b> Ahuja S., Scypinski S., eds.: Handbook of Modern Pharmaceutical Analysis, Separation Science and Technology, Vol.3, Academic Press, 2001. European Pharmacopoeia, 10th, online.pheur.org/EN/entry.html					
Course language: Slovak language					
Notes:					
Course assessment Total number of assessed students: 39					
	abs n				
100.0 0.0					
Provides: doc. RNDr. Taťána Gondová, CSc.					
Date of last modification: 15.11.2021					
Approved: prof. Dr. Yaroslav Bazel', DrSc.					

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/Course name: Analytical ChemistryACHSP/15					
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present					
Number of ECTS credits: 4					
Recommended semester/trimester of the course:					
Course level: II.					
Prerequisities:					
<b>Conditions for cours</b>	se completion:				

Learning outcomes:

#### Brief outline of the course:

Sampling and processing in analytical chemistry, basic rules of sampling. Representative sample, homogeneous sample. Sample pretreatment, selection of analytical method.

Types of chemical equilibria in solutions. Protolytic equilibria. Oxidation-reduction equilibria. Precipitation equilibria. Complex-forming equilibria. Use of analytical reaction in quantitative analysis. Methods of suppressing adverse reactions. Masking in analytical chemistry.

Basic principles and classification of separation methods. Extraction, principle, classification of extraction methods and their use in sample preparation - LLE, SPE, SPME, etc. Basic principles of chromatography, general description of chromatographic process. Qualitative and quantitative analysis in chromatography. Principles of chromatographic separation in gas chromatography (GC). Theoretical bases of liquid chromatography (LC). Gel permeation chromatography (GPC), ion exchange chromatography (IEC), supercritical fluid chromatography (SCF), principles and applications. UPLC versus HPLC. Electromigration methods, principle, classification and their use. Principles of the most important instrumental analytical methods. Electrochemical analytical methods, typical applications. Voltammetric methods, potentiometric methods, coulometry. Electrochemical dissolution analysis. Electrochemical detectors in flow systems.

Spectral analytical methods. Atomic and molecular spectroscopy: Principles, division. Atomic spectra, origin, analytical use. Basic differences in emission and absorption methods. Excitation sources. Radiation decomposition. Radiation detection. Matrix effects and their elimination. Implementation of analytical calibration. Atomic absorption spectrometry. Molecular spectrophotometry - UV/VIS, IR, MS. Thermal analysis.

Fundamentals of mathematical and statistical methods used in analytical chemistry. Probability distribution of measurement results, classical and robust estimates of mean and variance. Statistical tests and their application. Accuracy, precision, and reliability of results. Calibration in analytical chemistry, linear and nonlinear models.

#### **Recommended literature:**

1. Christian G.D.: Analytical Chemistry. John Wiley & Sons, Inc. New York – Chichester – Brisbane – Toronto – Singapore 2004.

- 2. Harvey D.: Modern Analytical Chemistry. McGraw Hill, Boston, 2000.
- 3. Harvey D.: Analytical Chemistry 2.1. LibreText. 2021.
- 4. Labuda J. a kol.: Analytická chémia. Vydavateľstvo STU. Bratislava 2019.
- 5. R. G. Brereton: Chemometrics., Wiley, Chichester, 2003.

6. M. Meloun, J. Militký: Kompendium statistického zpracování dat., Academia, Praha 2006.

#### Course language:

Slovak

## Notes:

The course is implemented by full-time or distance method (MS Team, Google Meet, BBB) or a combined method.

#### **Course assessment**

Total number of assessed students: 70

-	<u> </u>	-				
51.43		25.71	18.57	4.29	0.0	0.0
А		В	С	D	Е	FX

#### **Provides:**

Date of last modification: 20.01.2022

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

**Course ID:** ÚCHV/ **Course name:** Analytical Chemistry III.

ANCH2/06

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

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

Course method: present

Number of ECTS credits: 6

**Recommended semester/trimester of the course:** 1.

Course level: II.

Prerequisities:

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

Active participation in seminars.

Test.

#### Learning outcomes:

Advanced knowledge of modern analytical chemistry.

#### Brief outline of the course:

Analytical chemistry. Objects of analysis. Instrumental equipment of a modern analytical laboratory. Relationship between analytical chemistry and other scientific branches. Problems and trends in recent analytical chemistry. Speed and factors affecting the speed of analysis. Validation of analytical methods. Non-destructive methods of analysis, principle, utility. Distance analysis. Automation of analysis, examples. Flow analysis – FIA and SIA. Analytical reaction, chemical equilibrium in solutions. Kinetic analytical methods. Radiochemical analytical methods. Secondary Ion Mass Spectrometry. X-ray Photoelectron spectrometry. Mass pectrometry. Roentgen spectroscopic methods.

#### **Recommended literature:**

1. Willard H.H., Merritt L.L., Dean J.A., Settle F.A.: Instrumental Methods of Analysis, Wadsworth Publ. Co., Belmont (CA) 1988.

2. Christian G.D.: Analytical Chemistry. John Wiley & Sons, Inc. New York – Chichester – Brisbane – Toronto – Singapore 2004.

- 3. Harvey D.: Modern Analytical Chemistry. McGraw Hill, Boston, 2000.
- 4. Harvey D.: Analytical Chemistry 2.1. LibreText. 2021.
- 5. Labuda J. a kol.: Analytická chémia. Vydavateľstvo STU. Bratislava 2019.
- 6. Current journal literature.

# **Course language:**

Slovak

#### Notes:

The course is implemented by full-time or, if necessary, distance method (using the tools of MS Team, Google Meet, BBB) or a combined method. The form of teaching is specified by the teacher at the beginning of the semester and updated continuously.

Course assessment Total number of assessed students: 116					
A B C D E FX					
42.24	35.34	18.1	0.86	2.59	0.86
Provides: prof. Dr. Yaroslav Bazel', DrSc.					
Date of last modification: 25.01.2022					
Approved: prof. Dr. Yaroslav Bazel', DrSc.					

Faculty: Faculty of Science

Course ID: ÚCHV/	Course name: Atomic Spectrochemistry
AAS1/03	

Course type, scope and the method:

**Course type:** Lecture / Practice

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

Course method: present

**Number of ECTS credits:** 6

**Recommended semester/trimester of the course:** 1.

Course level: II.

Prerequisities:

#### Conditions for course completion:

Based on the ongoing evaluation: it means based on the results of laboratory exercises and seminar works with an assessment higher than 51%.

Based on ongoing evaluation, and the final written and oral examination. The exam consists of a written and an oral part and its overall percentage rating must be higher than 51%. (Written and oral exam evaluation: 51-60% - E; 61-70% - D; 71-80% - C; 81-90% - B; 91-100% - A).

#### Learning outcomes:

After completing the subject, the student will acquire theoretical information and practical experience in the field of spectro-analytical methods.

#### Brief outline of the course:

Information and the role of atomic absorption and emission spectroscopy in analytical chemistry. History of the development of spectral methods.

Theoretical foundations, principles and classification of optical methods. Experimental foundations of spectral methods. Atomic absorption spectrometry. Atomic emission spectrometry.

Atomic fluorescence spectrometry. X-ray spectrometry. Inorganic mass spectrometry. Molecular absorption spectrometry in the visible, ultraviolet and near-infrared region and its analytical applications.

## **Recommended literature:**

I.Němcová, L. Čermáková, P. Rychlovský: Spektrometrické analytické metódy. Karolinum, Praha, 1997.

D. A. Skoog, J. J. Leary: Instrumental Analytics. Springer, Berlin, 1996.

B. Welz, M. Sperling: Atomic Absorption Spectrometry, Wiley-VCH, Weinheim, 1998.

H. Günzler, A. Wiliams: Handbook of Analytical Techniques. Wiley-VCH, Weinheim, 2001.

G. Gauglitz, T. Vo-Dinh: Handbook of Spectroscopy. Wiley-VCH, Weinheim, 2003.

## **Course language:**

Slovak language

Notes:

Theoretical part of the course can also be carried out by distance learning, using MS Teams or BBB. The form of teaching is always specified at the beginning of the semester, and is continuously updated in accordance with the pandemic situation.

Course assessment					
Total number o	f assessed studen	ts: 114			
А	В	С	D	Е	FX
46.49	21.93	17.54	10.53	3.51	0.0
Provides: doc. Ing. Viera Vojteková, PhD.					
Date of last modification: 05.08.2022					
Approved: prof. Dr. Yaroslav Bazel', DrSc.					

	COURSE INFORMATION LETTER
University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
<b>Course ID:</b> ÚCHV/ ZEM/21	Course name: Basics of electroanalytical methods
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 1 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 14 esent
Number of ECTS cr	edits: 5
Recommended seme	ster/trimester of the course: 2., 4.
Course level: II.	
Prerequisities:	
Conditions for cours Active participation i 1. Participation in lab the student's absence during the semester assesses the preparati a protocol from each 2. Elaboration of 2 w for participation in th 3. Successful comple The evaluation of th a combination of co examination during t achieve at least 51% Note: Detailed condit (LMS UPJŠ).	e completion: n laboratory exercises and seminars; successful completion of the tests. oratory exercises is required. Assigned teacher who leads exercises justifying (incapacity for work, family reasons, etc.) for a maximum of two exercises without substitute supplying. The assigned teacher, who leads the seminar, on of students and their activity in seminars. The student is obliged to prepare laboratory exercise resp. assignment determined by the teacher. Written test. vritten assignments (or subject project), which will be one of the conditions e exam. tion of the final written test. e student's study results within the study of the subject is carried out by ntinuous control during the teaching part of the semester (50%) with an he examination period (50%). To complete the course it will be necessary to of the total evaluation. tions are updated annually within the repository for digital support materials
Learning outcomes: Getting information a Brief outline of the c Principle of electroa Linear and cyclic volt Amperometry and tit Coulometric titration Electroanalytical me methods. Selected ap of technological pro environment, in diag	bout the electroanalytical methods and application in laboratory practice. <b>ourse:</b> nalytical methods. Electrodes. Potentiometry. Voltammetry. Polarography. ammetry. Pulse voltammetry. Stripping voltammetry. Voltammetric titrations. trations with polarizable electrodes. Coulometry. Potentiostatic coulometry. s. Conductometry. Chronopotentiometry. asurements in flow systems. Miniaturization of electrochemical analytical pplications of electroanalytical methods as quality control in the analysis ducts, in bioanalytical applications, analysis of foreign substances in the nostic and clinical analysis, in forensic science, etc.
<b>Recommended litera</b> 1. J. Labuda a kol. Ar	alytická chémia, STU, Bratislava 2014.

2. Allen J. Bard, Cynthia G. Zoski. Electroanalytical Chemistry. A Series of Advances: Volume 26. Taylor&Francis, 2015.

3. D. Harvey: Modern Analytical Chemistry. McGraw Hill, Boston, 2000.

# Course language:

Slovak

## Notes:

The course is implemented by full-time or, if necessary, distance method using the MS Teams or BBB or a combined method. The form of teaching is specified by the teacher at the beginning of the semester and updated continuously.

# **Course assessment**

Total number of assessed students: 11

А	В	С	D	Е	FX
81.82	18.18	0.0	0.0	0.0	0.0

Provides: RNDr. Jana Šandrejová, PhD., univerzitná docentka

Date of last modification: 15.11.2021

Faculty: Faculty of Science

**Course ID:** ÚCHV/ **Course name:** Bioanalytical Chemistry BACH1/03

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:** 1.

Course level: II.

**Prerequisities:** 

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

Completion of block exercises. Processing and presentation of the assigned topic. Oral examination.

#### Learning outcomes:

Theoretical knowledge and practical experience regarding application of analytical chemistry and analytical methods to laboratory medicine.

#### Brief outline of the course:

Introduction to Bioanalytical Chemistry, biological samples classification. Factors affecting analytes in biological samples. Collection, transport and storage of biological samples. Selected procedures of sample pretreatment Control and management of quality in clinical laboratory. Enzymes in bioanalysis. Introduction to Immunochemical methods - basic characteristics of the immune system, antibody, antigen, hapten - definition, basic characteristics. Precipitation and Agglutination methods - principle, definition, use. Immunodiffusional methods. Radioimmunoanalytic methods (RIA). Nonisotopic methods (EIA, ELISA, LIA, FIA). Investigative procedures in medical microbiology. Principles miniaturization of analytical procedures in clinical chemistry, microchips, nanochips, sensors and biosensors.

#### **Recommended literature:**

1. Mikkelsen, S. R., Cortón, E.: Bioanalytical Chemistry, Wiley, 2004.

2. Wilson, I.: Bioanalytical Separations 4, (Handbook of Analytical Separations), Elsevier, 2003.

3. Suelter, C. H., Kricka, L. J.: Methods of Biochemical Analysis, Vol.37, Bioanalytical Instrumentation, Wiley, 1994.

4. Rodriguez-Diaz, R., Wehr, T., Tuck, S.: Analytical Techniques for Biopharmaceutical Development, Marcell Dekker, 2005.

## Course language:

Slovak

#### Notes:

The course is implemented by full-time or, if necessary, distance method using the MS Teams or BBB or a combined method. The form of teaching is specified by the teacher at the beginning of the semester and updated continuously

Course assessm Total number o	nent f assessed studen	ts: 130							
А	В	С	D	Е	FX				
35.38	35.38 37.69 16.92 9.23 0.77 0.0								
Provides: doc. ]	RNDr. Katarína I	Reiffová, PhD.							
Date of last mo	dification: 25.01	.2022							
Approved: prof	f. Dr. Yaroslav Ba	azel', DrSc.							

	COURSE INFORMATION LETTER
University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚCHV/ ACM1/06	Course name: Chemometrics
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: 2.
Course level: II.	
Prerequisities:	
Conditions for course On the basis of onge works, and a final wr On the basis of onge an oral part and its of evaluation: 51-60% -	the completion: bing evaluation, which requires the elaboration of homeworks and seminar itten project with an assessment higher than 51%. bing evaluation, and final examination. The exam consists of a written and overall percentage rating must be higher than 51%. (Written and oral exam E; 61-70% - D; 71-80% - C; 81-90% - B; 91-100% - A).
Learning outcomes: After completing the based evaluation of a Knowledge about the Knowledge about the practice.	course, the student will acquire knowledge about the correct and theoretically nalytical results and methods. e methods of validation and accreditation of laboratories. le result uncertainties, methods of decision statistics and good laboratory
Brief outline of the c The principles of the distribution of the me Statistical tests and th of the results. Calibra Evaluation of the ana examples in the fram	e mathematic- statistical methods used in analytical chemistry. Probability easuring results. Classic and robust estimation of the mean value and variance. heir application. Accuracy, precision, and reliability of the results. Uncertainity ation in the analytical chemistry, linear and nonlinear models. alytical methods, the chosen optimization approaches. Solving of the typical e of the practical lectures.

#### **Recommended literature:**

R. G. Brereton: Chemometrics., Wiley, Chichester, 2003

M. Meloun, J. Militký: Kompendium statistického zpracování dat., Academia, Praha 2006 James N. Miller, Jane C. Miller: Statistics and Chemometrics for Analytical Chemistry, Pearson Education Limited, England, 2010

# **Course language:**

Slovak language

Notes:

The course can be carried out by distance learning, using MS Teams or BBB. The form of teaching is always specified at the beginning of the semester, and is continuously updated in accordance with the pandemic situation.

Course assessm	nent								
Total number o	f assessed studen	ts: 120							
А	A B C D E FX								
40.83	40.83 28.33 21.67 5.0 4.17 0.0								
Provides: doc.	Ing. Viera Vojtek	ová, PhD.							
Date of last mo	dification: 05.08	3.2022							
Approved: prof	f. Dr. Yaroslav Ba	azel', DrSc.							

University: P. J. Šafá	rik University in Košice	
Faculty: Faculty of S	cience	
<b>Course ID:</b> ÚCHV/ RP/14	Course name: Class Project	;t
Course type, scope a Course type: Recommended cour Per week: Per stud Course method: pre	nd the method: rse-load (hours): y period: esent	
Number of ECTS cr	edits: 6	
Recommended seme	ster/trimester of the cours	e: 2.
Course level: II.		
Prerequisities:		
Submission of a year Its content is experim the obtained experim assigned experiments experiments, success the evaluation "comp	project based on the assignmental laboratory work on a nental results. The condition and their evaluation in the ful presentation of results an leted".	nent of the teacher. topic assigned by the teacher and evaluation of for successful completion is realization of the form of presentation. After the implementation of d answering any comments, the teacher will give
Learning outcomes: Mastering of individ according to available	ual work in the laboratory e literature.	and creative processing of the assigned topic,
Brief outline of the c	ourse:	
<b>Recommended litera</b> According to the reco Current journal litera	<b>ture:</b> ommendations of project sup ture.	ervisors.
<b>Course language:</b> Slovak, english.		
Notes:		
<b>Course assessment</b> Total number of asses	ssed students: 241	
	abs	n
	99.17	0.83
<b>Provides:</b> doc. RNDr. RNDr. Zuzana Vargov prof. RNDr. Vladimír	. Miroslav Almáši, PhD., RN /á, Ph.D., prof. RNDr. Juraj Zeleňák, DrSc., doc. RNDr	JDr. Miroslava Matiková Maľarová, PhD., prof. Černák, DrSc., doc. RNDr. Juraj Kuchár, PhD., Ivan Potočňák, PhD., prof. Dr. Yaroslav Bazeľ,

prof. RNDr. Vladimír Zeleňák, DrSc., doc. RNDr. Ivan Potočňák, PhD., prof. Dr. Yaroslav Bazeľ, DrSc., prof. Mgr. Vasil' Andruch, DSc., doc. RNDr. Katarína Reiffová, PhD., doc. RNDr. Taťána Gondová, CSc., doc. Ing. Viera Vojteková, PhD., RNDr. Rastislav Serbin, PhD., RNDr. Jana

Šandrejová, PhD., univerzitná docentka, Mgr. Michaela Rendošová, PhD., Mgr. Nikolas Király, PhD., prof. Dr. Andrii Vyshnikin, PhD., Serhii Zaruba, PhD.

**Date of last modification:** 25.01.2022

University D I	Čofóril I Inizzar	ity in Vačias			
University: P. J.	. Safarik Univers	sity in Kosice			
Faculty: Faculty	y of Science				
<b>Course ID:</b> ÚC DPO/22	HV/ Course na	ame: Diploma Th	esis and its Def	ence	
Course type, sc Course type: Recommended Per week: Per Course metho	ope and the me d course-load (h r study period: d: present	thod: ours):			
Number of EC	IS credits: 16				
Recommended	semester/trime	ster of the cours	e:		
<b>Course level:</b> II	•				
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 studer	ıts: 39			
А	В	С	D	Е	FX
74.36	17.95	7.69	0.0	0.0	0.0
Provides:					
Date of last mo	dification: 14.0	1.2022			
Approved: prof	. Dr. Yaroslav B	azel', DrSc.			

University: P. J.	Šafái	rik Univers	ity in Košice				
Faculty: Faculty	y of S	cience					
Course ID: ÚC EMST/05	<b>D:</b> ÚCHV/ <b>Course name:</b> Electrophoretic Methods						
Course type, sc Course type: I Recommended Per week: 2 / 1 Course metho	ope a Lectur l cour l Per d: pre	nd the met e / Practice rse-load (h study perio	hod: ours): od: 28 / 14				
Number of EC	ГS cro	edits: 5					
Recommended	seme	ster/trimes	ster of the cours	e: 1., 3.			
Course level: II	•						
Prerequisities:							
<b>Conditions for</b> Written control	<b>cours</b> test. V	<b>e completi</b> Written exa	<b>on:</b> mination.				
Learning outco Basic principles	mes: s of ele	ectromigrat	tion techniques a	nd their applica	tion in practise.		
Principles and o boundary metho chromatography electric field, the Joule heat, diffi analysis, electro of serum protein	classif od, Fo y (ME e phen usion, phore ns	fication of ocusing me EKC).Capil nomena acco gravity, ac etic separati	electromigration thods, Capillary lary zone electro ompanying separ lsorption, instrur on on a microchip	techniques - Z isotachophores ophoresis (CZI ation in an elect nentation, detec o. Electrophores	Cone electrophores sis (cITP), Micella E). Principle of se tric field - electroos ction, qualitative a sis of nucleic acid,	is, The moving ar electrokinetic eparation in an smotic pressure, and quantitative Elektrophoresis	
Recommended 1.Handbook of 2.P.Boček:Basic Chemistry, Czer	litera Capill c cour ch Ac	<b>ture:</b> lary Electro se and Adv ademy of S	phoresis, 2nd Ec anced course of cience, Brno, 19	l., CRC, Boca I Isotachophores 84	Raton, 1997 is,Institute of Anal	lytical	
<b>Course languag</b> Slovak	ge:						
Notes:		· · ·					
Course assessm Total number of	i <b>ent</b> f asses	ssed studen	ts: 29				
А		В	С	D	Е	FX	
48.28		51.72	0.0	0.0	0.0	0.0	
Provides: doc. I	RNDr.	Katarína F	Reiffová, PhD.				
Date of last mo	difica	tion: 25.01	.2022				
Approved: prof	. Dr. 1	Yaroslav Ba	azeľ, DrSc.				

University: P. J. Šafá	rik University in Košice	
Faculty: Faculty of S	cience	
<b>Course ID:</b> ÚCHV/ AZP1/04	Course name: Environmental Analytical Chemistry	
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	edits: 6	
Recommended seme	ester/trimester of the course: 1., 3.	
Course level: II.		
Prerequisities:		

## **Conditions for course completion:**

Active participation in laboratory exercises and seminars; successful completion of the final test. Elaboration of 2 written assignments (or subject project), which will be one of the conditions for participation in the exam. The evaluation of the student's study results within the study of the subject is carried out by a combination of continuous control during the teaching part of the semester (50%) with an examination during the examination period (50%).

Note: Detailed conditions are updated annually within the repository for digital support materials (LMS UPJŠ).

#### Learning outcomes:

The student acquires knowledge of the methods of environmental analysis.

#### Brief outline of the course:

Components of the environment: hydrosphere, lithosphere, atmosphere. Analytical methods used in the analysis of environmental samples. Choice of analytical method. Advantages and disadvantages of field methods. Sampling and sample preparation in environmental analysis. Chemical treatment of solid samples. Quality assurance system in environmental analysis laboratories. Good laboratory practice and accreditation of analytical laboratories. Analysis of water, soil, ores, sediments, air and food. Use of spectral, separation and electrochemical methods in environmental analysis. Automatic monitoring. Environmental monitoring.

#### **Recommended literature:**

- 1. Tölgyessy J. a kol. Chémia, biológia a toxikológia vody a ovzdušia. Bratislava, VEDA, 1984.
- 2. A.M. Ure, C.M. Davidson, Chemical Speciation in the Environment. Blackie, London 1995.
- 3. J.R. Dean, Extraction Methods for Environmental Analysis. Wiley, 1988.

4. H.D. Belitz, W. Grosch, P. Schieberle, Food Chemistry, Springer Verlag, 2004.

# Course language:

Slovak

#### Notes:

The course is implemented by full-time or, if necessary, distance method using the MS Teams or BBB or a combined method. The form of teaching is specified by the teacher at the beginning of the semester and updated continuously.

Course assessm Total number o	nent f assessed studen	ts: 267						
А	В	С	D	Е	FX			
46.82 16.85 18.35 6.74 11.24 0.0								
Provides: prof.	Mgr. Vasil' Andr	uch, DSc.						
Date of last mo	dification: 22.07	7.2022						
Approved: prof	f. Dr. Yaroslav Ba	azel', DrSc.						

University: P	J. Šafárik Univers	sity in Košice			
Faculty: Facult	ty of Science	5			
Course ID: ÚC EMDP/03	CHV/ Course na	ame: Experiment	tal Methods to M	laster's Thesis	
Course type, se Course type: Recommende Per week: 6 P Course methe	cope and the me Practice ed course-load (h Per study period: pd: present	thod: ours): 84			
Number of EC	<b>TS credits:</b> 6				
Recommended	l semester/trime	ster of the cours	e: 3.		
<b>Course level:</b> I	I.				
Prerequisities:					
<b>Conditions for</b> The supervisor week and at the	<b>course completi</b> of the diploma the end of the seme	on: nesis evaluates th ster.	ne student's exper	rimental work inc	dividually every
Learning outconduction of	omes: experimental me	thods necessary f	for the successful	l solution of the d	liploma thesis.
Brief outline o Technique of e use of experim work with spec synthesized org	f the course: experimental methental instrumental ctral and chromated compounds	nods, including th tion techniques i tographic method . Practical applic	he use of devices n the elaboration ls used in the ch ation of these me	s needed to solve of a diploma the aracterization of ethods.	e the thesis. The sis, focusing or the structure of
Recommended Current journa	l literature: l literature. Chem	ical online datab	ases.		
<b>Course langua</b> Slovak, englisł	<b>ge:</b>				
Notes: Teaching is car Teams. The for continuously u	rried out full-time rm of teaching is pdated.	or part-time, usi specified by the t	ng the BBB platt teacher at the beg	form (BigBlueBu ginning of the sen	utton) or MS nester and
Course assess	nent of assessed studen	its: 437			
Total number (		1			n
A A	B	C	D	E	FX

Viktor Víglaský, PhD., doc. RNDr. Katarína Reiffová, PhD., RNDr. Nataša Tomášková, PhD., RNDr. Slávka Hamuľaková, PhD., univerzitná docentka, doc. RNDr. Rastislav Varhač, PhD., RNDr. Danica Sabolová, PhD., univerzitná docentka, prof. Mgr. Vasiľ Andruch, DSc., prof. Dr. Yaroslav Bazel', DrSc., doc. RNDr. Ladislav Janovec, PhD., doc. Ing. Viera Vojteková, PhD., doc. RNDr. Mariana Budovská, PhD., doc. RNDr. Mária Vilková, PhD., RNDr. Monika Tvrdoňová, PhD., RNDr. Ján Elečko, PhD., RNDr. Jana Špaková Raschmanová, PhD., RNDr. Zuzana Kudličková, PhD., RNDr. Rastislav Serbin, PhD., RNDr. Jana Šandrejová, PhD., univerzitná docentka, prof. Dr. Andrii Vyshnikin, PhD.

**Date of last modification:** 25.01.2022

Faculty: Faculty of Science

**Course ID:** ÚCHV/ **Course name:** Forensic and Clinical Analytical Chemistry SKACH1/06

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: II.

Prerequisities:

**Conditions for course completion:** 

Elaboration and presentation of a seminar work with an assigned topic. Written examination.

#### Learning outcomes:

Application of analytical methods in criminology and forensic medicine.

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

Criminology section: basic principles and definition of subject. Basic criminalistic categories. Criminalistic track. Criminalistic technology. Criminalistic methods, resources, procedures and operations. Introduction to forensic chemistry. Chemical, physical and physicochemical methods of research tracks and material evidence. Dactyloscopy. Methods of individual identification of persons.

Toxicological part: definition, classification and role of toxicology. Separation methods used in toxicology. Definition of poison. Pharmacokinetics and metabolism. Absorption, distribution, metabolism and elimination. Nox accumulation in the body. Biotransformation of noxy, biotransformation reactions. Poisoning, overdose, toxic levels, nox interaction. General approaches to the treatment of acute poisoning. Laboratory diagnostics of poisoning, drug abuse, sample selection, detection limits and time detection window. Development trends in toxicology - current toxicological methods - advantages and limitations.

#### **Recommended literature:**

1.A. Mozayani, C.Noziglia: The Forensic Laboratory Handbook. Procedures and Practice, Springer, 2006

2.H.Duffus, H.G.J.Worth: Fundamental Toxicology, Springer, 2006

3.R.Bertholf, R.Winecker: Chromatographic Methods in Clinical Chemistry and Toxicology, Wiley. 2007

#### Course language:

Notes:

Course assessment Total number of assessed students: 77								
А	A B C D E FX							
62.34	25.97	11.69	0.0	0.0	0.0			
Provides: doc. RNDr. Katarína Reiffová, PhD.								
Date of last modification: 08.09.2021								
Approved: prof	Approved: prof. Dr. Yaroslav Bazel', DrSc.							

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: ÚCHV/ GAC/18	<b>Course name:</b> Green analytical chemistry: miniaturization, automation, sensors
Course type, scope a Course type: Lectur Recommended cour Per week: 2 / 1 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 28 / 14 esent
Number of ECTS cr	edits: 5
Recommended seme	ster/trimester of the course: 2.
Course level: II.	
Prerequisities:	
Conditions for cours Active participation i successful completion period. Note: Detailed condit (LMS UPJŠ).	e completion: n laboratory exercises or online seminars; elaboration of the subject project; n of the final test. Written test and oral examination during the examination tions are updated annually within the repository for digital support materials
<b>Learning outcomes:</b> Getting information chemistry.	about the green chemistry, miniaturization, and automation in analytical
Brief outline of the c	ourse:
Recommended litera 1. Labuda a kol. Ana Rok vydania: 2014, Počet 2. Current periodical 3. ANASTAS, P., WA University Press. 199 4. KOLEV S.D., Mcl Elsevier Wilson&Wil	hture: lytická chémia. ISBN: 9788022742429, Vydavateľstvo: STU Bratislava, strán: 671 literature. ARNER J. C. Green Chemistry: Theory and Practice. Oxford: Oxford 8. KELVIE I.D. Advences in flow injection analysis and related techniqoues. lson's, USA, 2008.
Course language: Slovak	
Notes: The course is implem BBB or a combined r the semester and upd	nented by full-time or, if necessary, distance method using the MS Teams or nethod. The form of teaching is specified by the teacher at the beginning of ated continuously.

<b>Course assessment</b> Total number of assessed students: 24								
А	A B C D E FX							
75.0	16.67	8.33	0.0	0.0	0.0			
Provides: RNDr. Jana Šandrejová, PhD., univerzitná docentka								
Date of last modification: 11.11.2021								
Approved: prof	Approved: prof. Dr. Yaroslav Bazel', DrSc.							

University: P. J. Šafá	University: P. J. Šafárik University in Košice					
Faculty: Faculty of S	cience					
Course ID: ÚCHV/ Course name: Hydrochemistry CHHS/07						
Course type, scope a Course type: Lectur Recommended cou Per week: 2 / 2 Per Course method: pre	Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present					
Number of ECTS cr	edits: 6					
Recommended semester/trimester of the course: 1., 3.						
Course level: II.	Course level: II.					

Prerequisities:

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

Active participation in laboratory exercises and seminars; successful completion of the final test. Elaboration of 2 written assignments (or subject project), which will be one of the conditions for participation in the exam. The evaluation of the student's study results within the study of the subject is carried out by a combination of continuous control during the teaching part of the semester (50%) with an examination during the examination period (50%).

Note: Detailed conditions are updated annually within the repository for digital support materials (LMS UPJŠ).

#### Learning outcomes:

The student acquires knowledge of the hydrochemistry.

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

European Water Charter. Water consumption. Water supplies. Water cycle in nature. Basics of water chemistry. Water sampling methods. Water analysis strategy. Methods of chemical analysis of water. Test method in water analysis. Automatic monitoring stations and sensors. Physical properties of water. Classification of substances present in natural waters. Types of natural waters and their characteristics. Water quality monitoring in Slovakia. Surface waters, their classification, chemical composition and properties. Pollution and analysis of surface waters. Sediments, their composition and analysis. Mutual influence of waters and sediments. Groundwater, their classification, chemical composition and properties. Groundwater pollution and analysis. Drinking water. Drinking water quality requirements. Physical, sensory and chemical indicators of drinking water quality. Analytical methods used in the analysis of drinking water. Domestic hot water preparation and requirements for its quality. Mineral waters, their classification, chemical composition, properties and analysis. Wastewater, their classification, chemical composition, properties and analysis. Sea water.

#### **Recommended literature:**

- 1. Tölgyessy J. a kol. Chémia, biológia a toxikológia vody a ovzdušia. Bratislava, VEDA, 1984.
- 2. Kalavská D., Holoubek I. Analýza vôd. Bratislava, Alfa, 1989. 262 s.
- 3. Handbook of Water and Wastewater Treatment Technologies. Ed. By Nicholas P

Cheremisinoff, Butterworth Heinemann, 2001. 576 p.

4. Principles of Water Quality Control, Ed. by Thy Tebbutt, Butterworth Heinemann, 1997. 288

p.

5. Water Technology. Ed. by N. F. Gray, Butterworth Heinemann, 2005. 600 p.

# Course language:

Slovak

## Notes:

The course is implemented by full-time or, if necessary, distance method using the MS Teams or BBB or a combined method. The form of teaching is specified by the teacher at the beginning of the semester and updated continuously.

## **Course assessment**

Total number of assessed students: 147

А	В	С	D	Е	FX
34.01	17.69	17.01	15.65	15.65	0.0

Provides: prof. Mgr. Vasil' Andruch, DSc.

Date of last modification: 22.07.2022

University: P. J.	Šafárik Univers	ity in Košice						
Faculty: Faculty	of Science							
Course ID: ÚCH KCHR/06	Course ID: ÚCHV/ Course name: Liquid Chromatography KCHR/06							
Course type, sco Course type: L Recommended Per week: 2 / 1 Course method	ope and the met ecture / Practice course-load (h Per study perio l: present	thod: c ours): od: 28 / 14						
Number of ECT	S credits: 5							
Recommended s	semester/trimes	ster of the course	e: 1.					
Course level: II.								
Prerequisities:								
<b>Conditions for c</b> Examination. PPT presentation	course completi	<b>on:</b> dern LC techniqu	ies.					
Learning outcom Advanced know	<b>nes:</b> ledges about ne	w LC methods an	d applications					
Brief outline of Theoretical prine Sample pretreate chromatography	the course: ciples of liquid c ment. New trend , combined system	chromatography. ds in HPLC tech ems with LC. Ap	Selection and on niques - uLC, plications.	optimisation of sep chiral analysis, n	paration process. nultidimensional			
Recommended I Skoog D.A.: Prin Mondello L., Le	l <b>iterature:</b> nciples of Instru wis A.C., Bartle	mental Analysis. K.D.: Multidime	Saunders, New ensional Chron	w York 1985. natography, Wiley	v, 2002.			
Course languag	e:							
Notes:								
Course assessme Total number of	ent assessed studen	ts: 77						
Α	В	С	D	Е	FX			
61.04	61.04 29.87 7.79 1.3 0.0 0.0							
Provides: doc. R	NDr. Taťána Go	ondová, CSc.						
Date of last mod	lification: 04.08	3.2022						
Approved: prof.	Dr. Yaroslav Ba	azel', DrSc.						
L								

University: P. J. Šafá	rik University in Košice
Faculty: Faculty of S	cience
Course ID: KF/ FMPV/22	Course name: Methodology of Science 1
Course type, scope a Course type: Lectur Recommended cour Per week: 1 / 1 Per Course method: pre	nd the method: re / Practice rse-load (hours): study period: 14 / 14 esent
Number of ECTS cr	edits: 2
Recommended seme	ster/trimester of the course:
Course level: II.	
Prerequisities:	
Conditions for cours Attendance: A studen than one seminar mus final control: during ther her activity. To be aw lectures and seminars	e completion: It may have one unexcused absence in seminar at the most. Absence in more at be reasoned and substituted by consultations. Conditions of continuous and the semester a student is continuously checked and assessed according to his/ varded the credits, a student must pass a test from knowledge obtained in the s. Results of the test will make up the final grade.
Learning outcomes: The course is aimed science. Significant p science in the 20th cer	at getting familiar with the basic issues of methodology and philosophy of part will be devoted to presenting the main concepts of the philosophy of ntury and this aim will be achieved by reading the source and interpretive texts.
Brief outline of the c Falsificationism and Development and cu Understanding the s Methodology of sci Methodological ana W.V.O. Quine – the	ourse: I critical realism by K. R. Popper. ritique of the Popper's concept. science development in the work by T. S. Kuhn. entific research programmes of I. Lakatos. rchism of P. Feyerabend. issue of relation between theory and empiricism.
Recommended litera BILASOVÁ, V. – AN FAJKUS, B.: Filosoff BEDNÁRIKOVÁ, M DÉMUTH, A. Filozo FEYERABEND, P.: I KUHN, T. S.: Štruktú	<b>ture:</b> JDREANSKÝ, E.: Epistemológia a metodológia vedy. Prešov: FF PU 2007. ie a metodologie vědy. Praha: Academia 2005. I. Úvod do metodológie vied. Trnavská univerzita: Trnava 2013. fické aspekty dejín vedy. Trnavská univerzita: Trnava 2013. Proti metodě. Prel. J. Fiala. Praha: Aurora 2001. fira vedeckých revolúcií. Prel. Ľ. Valentová. Bratislava 1982.
Course language: Slovak	
Notes:	

Course assessment Total number of assessed students: 6								
А	A B C D E FX							
100.0	0.0	0.0	0.0	0.0	0.0			
Provides: prof. PhDr. Eugen Andreanský, PhD.								
Date of last modification: 01.02.2022								
Approved: prot	Approved: prof. Dr. Yaroslav Bazel', DrSc.							

University: P I Šafár	ik University in Košice
Faculty: Faculty of Sc	ience
Course ID: ÚCHV/ MOL/06	Course name: Molecular Spectrometry
Course type, scope an Course type: Lecture Recommended cour Per week: 2 / 2 Per s Course method: pres	ad the method: e / Practice se-load (hours): atudy period: 28 / 28 sent
Number of ECTS cre	dits: 6
Course level. II	ter/trimester of the course; 2.
Prerequisities	
Conditions for course Active participation in 1. Participation in labor the student's absence ( during the semester w assesses the preparation a protocol from each 1 2. Elaboration of 2 wr participation in the exa 3. Successful complet The evaluation of the a combination of cont examination during th achieve at least 51% of Note: Detailed conditi (LMS UPJŠ).	e completion: a laboratory exercises and seminars; successful completion of the tests. bratory exercises is required. Assigned teacher who leads exercises justifying incapacity for work, family reasons, etc.) for a maximum of two exercises ithout substitute supllying. The assigned teacher, who leads the seminar, on of students and their activity in seminars. The student is obliged to prepare aboratory exercise resp. assignment determined by the teacher. Written test. itten assignments (or subject project), which will be one of the conditions for am. ion of the final written test. student's study results within the study of the subject is carried out by inuous control during the teaching part of the semester with an e examination period. To complete the course it will be necessary to of the total evaluation. ons are updated annually within the repository for digital support materials
Learning outcomes: Advanced theoretical	and practical knowledge of the modern methods of molecular spectroscopy.
Brief outline of the co Molekular spectropho Transform Infrared. Resonance. Nuclear M	ourse: otometry (Ultra-Violet, Visible, Infrared) for Chemical Analysis. Fourier Raman spectrometry. Microwave spectrometry. Electron Paramegnetic fagnetic Resonance.
Recommended literat 1. L.Koller. Analytick 2. S.Miertuš a kol. Ato 3. E.D.Olsen. Modern 4. A.Skoog, J.J.Leary. 5. Jie Shen, Tao Tang, 6. Aktuálna časopisec	ture: á chémia. TU Košice 2002. ómová a molekulová spektroskopia. Alfa. Bratislava. 1991. optical methods of analysis. McGraw-Hill, Inc. 1975. Instrumentelle Analytic. Springer. Berlin-Heidelberg. 1996. Li-Lian Wang. Spectral Methods.Springer. Berlin-Heidelberg. 2013. ká literatúra.

# Course language:

# Slovak

# Notes:

The course is implemented by full-time or, if necessary, distance method using the MS Teams or BBB or a combined method. The form of teaching is specified by the teacher at the beginning of the semester and updated continuously.

## **Course assessment**

Total number of assessed students: 80

А	В	С	D	Е	FX
51.25	28.75	16.25	3.75	0.0	0.0

**Provides:** prof. Dr. Yaroslav Bazel', DrSc., RNDr. Rastislav Serbin, PhD., RNDr. Jana Šandrejová, PhD., univerzitná docentka

## Date of last modification: 20.01.2022

University: P. J	. Šafárik Univers	ity in Košice						
Faculty: Faculty of Science								
<b>Course ID:</b> KF/ FILA/22	: KF/ Course name: Philosophical Antropology							
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present								
Number of EC	IS credits: 2							
Recommended	semester/trimes	ster of the cours	e:					
Course level: II	•							
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	<b>Course assessment</b> Total number of assessed students: 0							
А	В	С	D	Е	FX			
0.0	0.0 0.0 0.0 0.0 0.0 0.0							
Provides: doc. PhDr. Kristína Bosáková, PhD.								
Date of last modification: 01.02.2022								
Approved: prof. Dr. Yaroslav Bazel', DrSc.								

	CO	OURSE INFORM	MATION LETT	ER	
University: P. J	. Šafárik Univers	ity in Košice			
Faculty: Facult	y of Science				
Course ID: ÚC PBACH1/03	HV/ Course na	ame: Practical in	Bioanalytical Ch	nemistry	
Course type, sc Course type: 1 Recommended Per week: 3 P Course metho	ope and the met Practice d course-load (h er study period: d: present	thod: ours): 42			
Number of EC	<b>FS credits:</b> 3				
Recommended	semester/trimes	ster of the cours	<b>e:</b> 2., 4.		
Course level: II					
Prerequisities:					
Conditions for Assessment	course completi	on:			
Learning outco Application of	mes: theoretical know	ledge to bioanaly	tical laboratory p	practise	
Brief outline of Analytical cher and processing radioimunoanal acid, selected se	the course: mistry in laborat of biological ytical methods ( eparation method	tory medicine, b samples, enzym RIA), electropho ls for the analysis	basic analysis of nes in bioanalys pretic methods, a s of biomolecules	biological systems biological systems bis, immunochen nalytical signific bis.	ems, the nature mical methods, ance of nucleic
Recommended 1. Mikkelsen S. 2. Wilson I.: Bi 3. Suelter C.H., Instrumentation 4. Rodriguez-D Development, M	literature: R, Cortón E.: Bi oanalytical Separ Kricka L.J.: Met I, Wiley, 1994 iaz R., Wehr T., 7 Marcell Dekker, 2	oanalytical Chem rations 4, (Handb hods of Biochem Tuck S.: Analytic 2005	nistry, Wiley, 200 book of Analytica lical Analysis, Vo cal Techniques fo	04 al Separations), E bl.37, Bioanalytic or Biopharmaceut	Elsevier, 2003 cal tical
<b>Course langua</b> Slovak	ge:				
Notes: The course is ir BBB or a comb the semester an	nplemented by fu ined method. Th d updated contin	all-time or, if nec e form of teachin uously	essary, distance i g is specified by	nethod using the the teacher at the	MS Teams or e beginning of
<b>Course assessm</b> Total number of	<b>tent</b> f assessed studen	ts: 0			
A	В	С	D	Е	FX
0.0	0.0	0.0	0.0	0.0	0.0

Provides: doc. RNDr. Katarína Reiffová, PhD.

**Date of last modification:** 25.01.2022

University: P. J	University: P. J. Šafárik University in Košice							
Faculty: Facult	y of Science							
Course ID: ÚC AVZ1/02	Course ID: ÚCHV/ Course name: Sampling of Analytical Samples							
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present								
Number of EC	TS credits: 5							
Recommended	semester/trim	ester of the cours	e: 2.					
Course level: II	•							
Prerequisities:								
<b>Conditions for</b> Oral examination	course comple on. Sampling of	<b>tion:</b> `real sample. Sucs	esfull exam is b	y 40% of right and	swer.			
Learning outco	omes:							
Sample, charac samples. Samp pre-concentration Chromatograph	terisation. Sam ling techniques on. Sample st ic sample pre-t	pling and norms of S. Sampling labor oring and conserve reatment.	effecting sampli atory equipmen vation. Matrix	ng process. Quan t. Sampling tech simplifying, spo	ntity, number of niques. Sample ecific analysis.			
Recommended literature: O. Stoeppler: Sampling and Sample Preparation Practical Guide for Analytical Chemists. Academic Press, London, 2002. E. P. Popek: Sampling and Analysis of Environmental Chemical Pollutants. Elsevier Science, San Diego, 2003.								
Course languag	ge:							
Notes:								
Course assessment Total number of assessed students: 212								
А	В	C	D	Е	FX			
62.26	19.81	13.21	3.77	0.94	0.0			
Provides: prof.	RNDr. Andrej (	Driňak, PhD.		-				
Date of last mo	dification: 24.1	1.2021						
Approved: prof	f. Dr. Yaroslav I	Bazel', DrSc.						

University: P. J. Šafári	ik University in Košice
Faculty: Faculty of Sc	ience
Course ID: ÚTVŠ/ CM/13	Course name: Seaside Aerobic Exercise
Course type, scope an Course type: Practice Recommended course Per week: 2 Per stud Course method: press	ad the method: e se-load (hours): ly period: 28 sent
Number of ECTS cre	dits: 2
Recommended semes	ter/trimester of the course:
Course level: II.	
Prerequisities:	
Conditions for course Completion: passed Condition for successf - active participation in - effective performanc	completion: ful course completion: n line with the study rule of procedure and course guidelines e of all tasks- aerobics, water exercise, yoga, Pilates and others
Learning outcomes: Content standard: The student demonstra course syllabus and re Performance standard: Upon completion of th - perform basic aerobi - conduct verbal and n - organise and manage	ttes relevant knowledge and skills in the field, which content is defined in the commended literature. : ne course students are able to meet the performance standard and: cs steps and basics of health exercises, ion-verbal communication with clients during exercise, e the process of physical recreation in leisure time
Brief outline of the co Brief outline of the co I. Basic aerobics – low 2. Basics of aqua fitne 3. Basics of Pilates 4. Health exercises 5. Bodyweight exercise 6. Swimming 7. Relaxing yoga exerce 8. Power yoga 9. Yoga relaxation 10. Final assessment Students can engage volleyball, football, ta	urse:         urse:         v impact aerobics, high impact aerobics, basic steps and cuing         ss         ies         cises         in different sport activities offered by the sea resort – swimming, rafting, ble tennis, tennis and other water sports in particular.
1. BUZKOVÁ, K. 200	ure: )6. Fitness jóga. Praha: Grada. 167 s.

<ol> <li>ČECHOVSKÁ, I., MILEROVÁ, H., NOVOTNÁ, V. Aqua-fitness. Praha: Grada. 136 s.</li> <li>EVANS, M., HUDSON, J., TUCKER, P. 2001. Umění harmonie: meditace, jóga, tai-či, strečink. 192 s.</li> <li>JARKOVSKÁ, H., JARKOVSKÁ, M. 2005. Posilováni s vlastním tělem 417 krát jinak. Praha: Grada. 209 s.</li> <li>KOVAŘÍKOVÁ, K. 2017. Aerobik a fitness. Karolium, 130 s.</li> </ol>					
Course language: Slovak language					
Notes:					
Course assessment Total number of assessed students: 62					
abs	n				
9.68 90.32					
Provides: Mgr. Agata Dorota Horbacz, PhD.					
Date of last modification: 29.03.2022					
Approved: prof. Dr. Yaroslav Bazel', DrSc.					

University: P. J	. Šafárik Univers	ity in Košice						
Faculty: Faculty	y of Science							
Course ID: KF/ FIVYC/22	D: KF/ 2 Course name: Selected Topics in Philosophy of Education (General Introduction)							
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 1 / 1 Per study period: 14 / 14 Course method: present								
Number of EC	TS credits: 2							
Recommended	semester/trimes	ster of the cours	e:					
Course level: II	- -							
Prerequisities:								
Conditions for	course completi	on:						
Learning outco	omes:							
Brief outline of	the course:							
Recommended	literature:							
Course languag	ge:							
Notes:								
Course assessm Total number of	Course assessment Total number of assessed students: 2							
А	В	С	D	Е	FX			
100.0	100.0 0.0 0.0 0.0 0.0							
Provides: PhDr. Dušan Hruška, PhD.								
Date of last mo	dification: 27.04	1.2022						
Approved: prof. Dr. Yaroslav Bazel', DrSc.								

University: P. J.	Šafárik Univers	ity in Košice						
Faculty: Faculty	of Science							
<b>Course ID:</b> ÚCH VKAC/19	<b>D:</b> ÚCHV/ <b>Course name:</b> Selected chapters of analytical chemistry 9							
Course type, sco Course type: Le Recommended Per week: 2 / 1 Course method	pe and the met ecture / Practice course-load (h Per study perio : present	thod: ; ours): od: 28 / 14						
Number of ECT	S credits: 5							
Recommended s	emester/trimes	ster of the cours	e: 2., 4.					
Course level: II.	,			-				
Prerequisities:								
Active participat assignments (or exam. The evalu by a combination examination duri Note: Detailed co (LMS UPJŠ). Learning outcom	ion in seminars subject project ation of the stu n of continuous ng the examina onditions are up nes:	; successful com c), which will be ident's study results control during to tion period (50% odated annually v	pletion of the f one of the co lts within the s he teaching pa ). vithin the repos	inal test. Elaboration onditions for particular productions for particular of the subject of the semester itory for digital su	ion of 2 written icipation in the ct is carried out (50%) with an upport materials			
bachelor's studies	s.	nownedge acqui	eu in the new	i of analytical ch	uning during			
Brief outline of t	he course:							
<b>Recommended li</b> 1. Current scienti	<b>terature:</b> fic literature.							
<b>Course language</b> Slovak	:							
Notes: The course is imp BBB or a combin the semester and	plemented by fu and method. The updated continu	Ill-time or, if nec e form of teachin uously.	essary, distance g is specified b	method using the y the teacher at the	MS Teams or e beginning of			
<b>Course assessme</b> Total number of a	nt assessed studen	ts: 16						
A	В	С	D	Е	FX			
56.25	18.75	25.0	0.0	0.0	0.0			
Provides: prof. N	lgr. Vasil' Andr	uch, DSc.		_				
Date of last mod	ification: 22.07	7.2022						

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: ÚCHV/ SP1/14	Course name: Semestral Project I						
Course type, scope a Course type: Recommended cour Per week: Per stud Course method: pre	nd the method: rse-load (hours): ly period: esent						
Number of ECTS cr	edits: 4						
Recommended seme	ster/trimester of the course: 1.						
Course level: II.							
Prerequisities:							
Conditions for cours Elaboration and subm is an independent sea original papers, its pr After a successful pro "completed".	e completion: hission of a semester project based on the assignment of the teacher. Its content irch of scientific information in scientometric databases, subsequent study of rocessing and presentation of the results of literare search. esentation and answering any comments, the teacher will give the evaluation						
<b>Learning outcomes:</b> Mastering the indepe literature.	ndent and creative processing of the assigned topic using the latest scientific						
Brief outline of the c WoS and Scopus scie Ways to search these Specific search accor Selection of obtained Finding relevant orig Study of selected pap Processing of obtained Presentation of the re	ourse: intific databases, resp. other, by the teacher suggested, accessible databases. databases. lring to the assignement of the teacher. results. inal articles. bers. ed information into presentation. esults.						
<b>Recommended litera</b> WoS and Scopus scie literature publishers.	<b>iture:</b> Intific databases, Science direct and other accessible websites of scientific Current scientific papers.						
<b>Course language:</b> Slovak, English.							
Notes:							

Course assessment						
Total number of assessed students: 249						
abs	n					
99.6	0.4					

**Provides:** RNDr. Rastislav Serbin, PhD., prof. RNDr. Mária Kožurková, CSc., prof. Dr. Yaroslav Bazel', DrSc., doc. RNDr. Ján Imrich, CSc., doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, prof. RNDr. Erik Sedlák, DrSc., RNDr. Nataša Tomášková, PhD., doc. RNDr. Viktor Víglaský, PhD., doc. RNDr. Rastislav Varhač, PhD., RNDr. Danica Sabolová, PhD., univerzitná docentka, RNDr. Jana Šandrejová, PhD., univerzitná docentka, doc. RNDr. Ivan Potočňák, PhD., RNDr. Marián Fabián, CSc., doc. RNDr. Miroslav Almáši, PhD., RNDr. Miroslava Matiková Maľarová, PhD., prof. RNDr. Zuzana Vargová, Ph.D., prof. RNDr. Juraj Černák, DrSc., doc. RNDr. Juraj Kuchár, PhD., prof. RNDr. Vladimír Zeleňák, DrSc., Mgr. Michaela Rendošová, PhD., Mgr. Nikolas Király, PhD., prof. Dr. Andrii Vyshnikin, PhD., Serhii Zaruba, PhD., prof. Mgr. Vasiľ Andruch, DSc., doc. RNDr. Katarína Reiffová, PhD., doc. Ing. Viera Vojteková, PhD.

Date of last modification: 24.01.2022

University: P. J. Šafá	rik University in Košice				
Faculty: Faculty of S	cience				
Course ID: ÚCHV/ Course name: Semestral Project II SPII/14					
Course type, scope a Course type: Recommended cour Per week: Per stud Course method: pre	nd the method: rse-load (hours): ly period: esent				
Number of ECTS cr	edits: 6				
Recommended seme	ster/trimester of the cours	e: 3.			
Course level: II.					
Prerequisities:					
<b>Conditions for cours</b> Semestral project.	e completion:				
<b>Learning outcomes:</b> Work in the laborator	ry and creative processing o	f the assigned topic.			
Brief outline of the c	ourse:				
Recommended litera According to the reco Current journal litera	nture: commendations of project sup ture.	pervisors.			
Course language:					
Notes:					
Course assessment Total number of asse	ssed students: 80				
	abs	n			
100.0 0.0					
<b>Provides:</b> prof. Dr. Y. Katarína Reiffová, Ph RNDr. Renáta Oriňak univerzitná docentka,	aroslav Bazel', DrSc., doc. F D., doc. Ing. Viera Vojtekov ová, DrSc., RNDr. Rastislav prof. Dr. Andrii Vyshnikin,	NDr. Taťána Gondová, CSc., doc. RNDr. vá, PhD., prof. Mgr. Vasiľ Andruch, DSc., prof. v Serbin, PhD., RNDr. Jana Šandrejová, PhD., PhD., Serhii Zaruba, PhD.			
Date of last modification: 06.10.2021					
Approved: prof. Dr. Yaroslav Bazel', DrSc.					

University: P. J. Šafá	rik University in Košice							
Faculty: Faculty of Science								
<b>Course ID:</b> ÚCHV/ SPIII/15	se ID: ÚCHV/ Course name: Semestral Project III							
Course type, scope a Course type: Recommended cour Per week: Per stud Course method: pre	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: 6							
Recommended seme	ster/trimester of the cours	e: 4						
Course level: II.								
Prerequisities:								
<b>Conditions for cours</b> Mastering independent scientific experiment the results. Submission	e completion: ent and creative work con- s in the laboratory on the ba on of the semester project.	cerning the preparation and implementation of sis of the assigned topic and the ability to present						
<b>Learning outcomes:</b> Work in the laborator	y and creative processing of	f the assigned topic.						
Brief outline of the c Selected experimenta of a comprehensive conferences.	ourse: I topics prepared within the material and its presentatio	diploma theses. Processing of results in the form n in departmental seminars or student scientific						
<b>Recommended litera</b> According to the reco Current journal litera	<b>iture:</b> commendations of project sup ture.	pervisors.						
<b>Course language:</b> Slovak, english.								
Notes:								
<b>Course assessment</b> Total number of asses	ssed students: 61							
	abs	n						
100.0 0.0								
<b>Provides:</b> prof. Mgr. Vasil' Andruch, DSc., prof. Dr. Yaroslav Bazel', DrSc., doc. Ing. Viera Vojteková, PhD., doc. RNDr. Taťána Gondová, CSc., doc. RNDr. Katarína Reiffová, PhD., RNDr. Jana Šandrejová, PhD., univerzitná docentka, RNDr. Rastislav Serbin, PhD., prof. Dr. Andrii Vyshnikin, PhD., Serhii Zaruba, PhD.								
Date of last modification: 24.01.2022								
Approved: prof. Dr. Yaroslav Bazel', DrSc.								

University: P. J.	Šafárik Univers	ity in Košice						
Faculty: Faculty	of Science							
Course ID: ÚCI SDP/03	Course ID: ÚCHV/ Course name: Seminar to Diploma Thesis SDP/03							
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 EC	<b>FS credits:</b> 2							
Recommended	semester/trimes	ster of the cours	se: 3.					
Course level: II								
Prerequisities:								
Active participa for serious rease completing the student.	tion in all seminons (e.g. illness) course, the teach	hars. In case of a b, fulfillment of her will give an e	non-participation alternative criter evaluation based	in a maximum of ia assigned by th on the activity ar	of two seminars e teacher. After nd results of the			
Learning outco After completin emphasis on acc	<b>mes:</b> g the course, the curate expressior	e student is able and adherence	to work indepen to ethical princip	dently in writing les.	a thesis with an			
<b>Brief outline of</b> General principl phenomenon. Pr of citing literatu	the course: les of thesis writi rocessing of expo re, preparation f	ng, formal requinerimental results	rements of diplor in the form of ta f the diploma the	na thesis, plagiaris bles, figures and sis.	sm as a negative graphs. Method			
Recommended As recommended	literature: ed by the teacher	:						
<b>Course languag</b> Slovak, English	je:							
Notes:								
Course assessm Total number of	ent assessed studen	ts: 414						
А	В	С	D	E	FX			
96.38	1.69	0.97	0.24	0.24	0.48			
Provides: doc. F doc. RNDr. Ján DrSc., prof. RNI Vojteková, PhD.	RNDr. Andrea St Imrich, CSc., pro Dr. Andrej Oriňa , doc. RNDr. Ka	raková Fedorko of. RNDr. Katari k, PhD., prof. R tarína Reiffová,	vá, PhD., prof. R na Györyová, Dı NDr. Jozef Gond PhD., doc. RND	NDr. Mária Kožu Sc., prof. RNDr. la, DrSc., doc. Ing r. Taťána Gondov	Irková, CSc., Juraj Černák, g. Viera á, CSc., doc.			

RNDr. Mária Reháková, CSc., doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, prof. RNDr. Zuzana Vargová, Ph.D., prof. RNDr. Vladimír Zeleňák, DrSc., doc. RNDr. Ivan

Potočňák, PhD., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Dušan Koščík, CSc., RNDr. Slávka Hamuľaková, PhD., univerzitná docentka, doc. RNDr. Ladislav Janovec, PhD., RNDr. Zuzana Kudličková, PhD., prof. Mgr. Vasiľ Andruch, DSc., prof. Dr. Yaroslav Bazeľ, DrSc., doc. RNDr. Miroslav Almáši, PhD., RNDr. Jana Šandrejová, PhD., univerzitná docentka, RNDr. Rastislav Serbin, PhD., RNDr. Radka Gorejová, PhD., RNDr. Ivana Šišoláková, PhD., univerzitná docentka, Mgr. Nikolas Király, PhD., RNDr. Jana Shepa, PhD., prof. Dr. Andrii Vyshnikin, PhD.

**Date of last modification:** 25.01.2022

University: P. J.	University: P. I. Šafárik University in Košice						
Faculty: Faculty	v of Science	·)					
Course ID: ÚC VSE1a/04	ÚCHV/ <b>Course name:</b> Special Seminar						
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present							
Number of EC	<b>FS credits:</b> 2						
Recommended	semester/trimes	ster of the cours	<b>e:</b> 1.				
Course level: II	•						
Prerequisities:							
Conditions for	course completi	on:					
Learning outco	mes:						
Brief outline of Actual problem students theses.	<b>the course:</b> s of physical and	l analytical chem	istry which are co	onnected with the	e solution of the		
Recommended	literature:						
Course languag	ge:						
Notes:							
Course assessm Total number of	ent f assessed studen	ıts: 66					
А	В	С	D	Е	FX		
92.42	3.03	1.52	1.52	1.52	0.0		
Provides: prof. Dr. Yaroslav Bazel', DrSc., doc. RNDr. Katarína Reiffová, PhD., doc. RNDr. Taťána Gondová, CSc., doc. Ing. Viera Vojteková, PhD., prof. Mgr. Vasil' Andruch, DSc., doc. RNDr. Andrea Straková Fedorková, PhD., prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Rastislav Serbin, PhD., RNDr. Jana Šandrejová, PhD., univerzitná docentka, prof. Dr. Andrii Vyshnikin, PhD., Serhii Zaruba, PhD.							

University: P. J.	University: P. J. Šafárik University in Košice						
Faculty: Faculty	of Science						
Course ID: ÚCI VSE1b/04	HV/ Course na	Course name: Special Seminar					
Course type, sc Course type: F Recommended Per week: 2 Pe Course 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 ECT	<b>FS credits:</b> 2						
Recommended	semester/trime	ster of the cours	e: 2.				
Course level: II	-						
Prerequisities:							
Conditions for a	course complet	ion:					
Learning outco	mes:						
Brief outline of Actual problems students theses.	<b>Brief outline of the course:</b> Actual problems of physical and analytical chemistry which are connected with the solution of the students theses.						
Recommended	literature:						
Course languag	ge:						
Notes:							
Course assessm Total number of	Course assessment Total number of assessed students: 67						
А	В	С	D	Е	FX		
94.03	94.03 1.49 2.99 1.49 0.0 0.0						
<b>Provides:</b> prof. Dr. Yaroslav Bazel', DrSc., doc. RNDr. Andrea Straková Fedorková, PhD., prof. RNDr. Andrej Oriňak, PhD., doc. Ing. Viera Vojteková, PhD., doc. RNDr. Katarína Reiffová, PhD., prof. RNDr. Renáta Oriňaková, DrSc., doc. RNDr. Taťána Gondová, CSc., prof. Mgr. Vasil' Andruch, DSc., RNDr. Rastislav Serbin, PhD., RNDr. Jana Šandrejová, PhD., univerzitná docentka, prof. Dr. Andrii Vyshnikin, PhD., Serhii Zaruba, PhD.							
Date of last modification: 07.11.2022							
Approved: prof. Dr. Yaroslav Bazel', DrSc.							

University: P. J. Šafán	rik University in Košice							
Faculty: Faculty of S	cience							
Course ID: ÚTVŠ/ Course name: Sports Activities I. TVa/11								
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present							
Number of ECTS cro	edits: 2							
Recommended seme	ster/trimester of the course: 1.							
Course level: I., II., P								
Prerequisities:								
<b>Conditions for cours</b> Min. 80% of active pa	e completion: articipation in classes.							
Learning outcomes: Sports activities in all They have a great im enables students to s improve.	their forms prepare university students for their professional and personal life. pact on physical fitness and performance. Specialization in sports activities trengthen their relationship towards the selected sport in which they also							
<b>Brief outline of the c</b> Brief outline of the co The Institute of physi activities aerobics; ail yoga, power yoga, p tennis, chess, volleyb Additionally, the Inst offers winter courses the Tisza River) with participation.	burse: burse: cal education and sport at the Pavol Jozef Šafárik University offers 20 sports kido, basketball, badminton, body-balance, body form, bouldering, floorball, ilates, swimming, fitness, indoor football, SM system, step aerobics, table all, tabata, cycling. itute of physical education and sport at the Pavol Jozef Šafárik University (ski course, survival) and summer courses (aerobics by the sea, rafting on an attractive programme, sports competitions with national and international							
Recommended litera BENCE, M. et al. 200 [online] Dostupné na: BUZKOVÁ, K. 2006 8024715252. JARKOVSKÁ, H, JA Grada. ISBN 9788024 KAČÁNI, L. 2002. F 8089197027. KRESTA, J. 2009. Fu LAWRENCE, G. 201 SNER, Wolfgang. 200	<ul> <li>ture:</li> <li>)5. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8.</li> <li>https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571</li> <li>. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN</li> <li>. RKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: 4757308.</li> <li>utbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN</li> <li>utsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.</li> <li>9. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.</li> <li>04. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.</li> </ul>							

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.

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

## **Course language:**

Slovak language

## Notes:

#### **Course assessment**

Total number of assessed students: 15781

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
85.74	0.06	0.0	0.0	0.0	0.04	9.0	5.15

**Provides:** Mgr. Patrik Berta, Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., Mgr. Marcel Čurgali, Mgr. Alena Buková, PhD., univerzitná docentka, doc. PaedDr. Ivan Uher, MPH, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Zuzana Küchelová, PhD., Mgr. Ferdinand Salonna, PhD.

## Date of last modification: 07.02.2024

University P I Čafá	rik University in Košice					
Econtra Econtra ef C						
raculty: raculty of Science						
Course ID: UTVS/     Course name: Sports Activities II.       'Vb/11						
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28					
Number of ECTS cro	edits: 2					
Recommended seme	ster/trimester of the course: 2.					
Course level: I., II., P						
Prerequisities:						
Conditions for course completion: active participation in classes - min. 80%.						
Learning outcomes: Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.						
Brief outline of the course: Brief outline of the course: The Institute of physical education and sport at the Pavol Jozef Šafárik University offers 20 sports activities aerobics; aikido, basketball, badminton, body-balance, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, fitness, indoor football, SM system, step aerobics, table tennis, chess, volleyball, tabata, cycling. Additionally, the Institute of physical education and sport at the Pavol Jozef Šafárik University offers winter courses (ski course, survival) and summer courses (aerobics by the sea, rafting on the Tisza River) with an attractive programme, sports competitions with national and international participation.						
Recommended literature: BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571 BUZKOVÁ, K. 2006. Fitness ióga, harmonické cvičení těla I duše. Praha: Grada, ISBN						

8024715252.

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

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

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

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

## **Course language:**

Slovak language

## Notes:

## **Course assessment**

Total number of assessed students: 13802

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
83.85	0.49	0.01	0.0	0.0	0.04	11.17	4.43

**Provides:** Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Marcel Čurgali, Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., Mgr. Alena Buková, PhD., univerzitná docentka, doc. PaedDr. Ivan Uher, MPH, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Zuzana Küchelová, PhD., Mgr. Ferdinand Salonna, PhD.

Date of last modification: 07.02.2024

University: P. J. Safărık University in Košice						
Faculty: Faculty of Science						
Course ID: ÚTVŠ/       Course name: Sports Activities III.         TVc/11						
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce rse-load (hours): dy period: 28 esent					
Number of ECTS cr	edits: 2					
Recommended seme	ster/trimester of the course: 3.					
Course level: I., II.						
Prerequisities:						
<b>Conditions for cours</b> min. 80% of active pa	e completion: articipation in classes					
Learning outcomes: Sports activities in all They have a great im enables students to s improve.	their forms prepare university students for their professional and personal life. apact on physical fitness and performance. Specialization in sports activities strengthen their relationship towards the selected sport in which they also					
Brief outline of the c Brief outline of the co The Institute of physic activities aerobics; ai yoga, power yoga, p tennis, chess, volleyb Additionally, the Inst offers winter courses the Tisza River) with participation.	ourse: burse: cal education and sport at the Pavol Jozef Šafárik University offers 20 sports kido, basketball, badminton, body-balance, body form, bouldering, floorball, ilates, swimming, fitness, indoor football, SM system, step aerobics, table all, tabata, cycling. titute of physical education and sport at the Pavol Jozef Šafárik University (ski course, survival) and summer courses (aerobics by the sea, rafting on an attractive programme, sports competitions with national and international					
Recommended litera BENCE, M. et al. 200 [online] Dostupné na BUZKOVÁ, K. 2006 8024715252. JARKOVSKÁ, H, JA Grada. ISBN 978802 KAČÁNI, L. 2002. F 8089197027. KRESTA, J. 2009. Fu LAWRENCE, G. 201 SNER, Wolfgang. 20	<ul> <li>hture:</li> <li>05. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8.</li> <li>https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571</li> <li>Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN</li> <li>ARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: 4757308.</li> <li>utbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN</li> <li>utsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.</li> <li>Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.</li> <li>04. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.</li> </ul>					

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.

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

## **Course language:**

Slovak language

## Notes:

#### **Course assessment**

Total number of assessed students: 9334

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
87.96	0.06	0.01	0.0	0.0	0.02	4.92	7.03

**Provides:** Mgr. Marcel Čurgali, Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., Mgr. Alena Buková, PhD., univerzitná docentka, doc. PaedDr. Ivan Uher, MPH, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Zuzana Küchelová, PhD., Mgr. Ferdinand Salonna, PhD.

Date of last modification: 07.02.2024

University: P. J. Šafá	University: P. J. Šafárik University in Košice							
Faculty: Faculty of S	Faculty: Faculty of Science							
Course ID: ÚTVŠ/ Course name: Sports Activities IV. TVd/11								
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present							
Number of ECTS cro	edits: 2							
Recommended seme	ster/trimester of the course: 4.							
Course level: I., II.								
Prerequisities:								
<b>Conditions for cours</b> min. 80% of active pa	e completion: articipation in classes							
<b>Learning outcomes:</b> Sports activities in all They have a great im enables students to s improve.	their forms prepare university students for their professional and personal life. spact on physical fitness and performance. Specialization in sports activities strengthen their relationship towards the selected sport in which they also							
Brief outline of the c Brief outline of the co The Institute of physic activities aerobics; ai yoga, power yoga, p tennis, chess, volleyb Additionally, the Inst offers winter courses the Tisza River) with participation.	ourse: burse: cal education and sport at the Pavol Jozef Šafárik University offers 20 sports kido, basketball, badminton, body-balance, body form, bouldering, floorball, ilates, swimming, fitness, indoor football, SM system, step aerobics, table all, tabata, cycling. titute of physical education and sport at the Pavol Jozef Šafárik University (ski course, survival) and summer courses (aerobics by the sea, rafting on an attractive programme, sports competitions with national and international							
Recommended litera BENCE, M. et al. 200 [online] Dostupné na BUZKOVÁ, K. 2006 8024715252. JARKOVSKÁ, H, JA Grada. ISBN 978802 KAČÁNI, L. 2002. F 8089197027. KRESTA, J. 2009. Fu LAWRENCE, G. 201 SNER, Wolfgang. 20	<ul> <li>ture:</li> <li>D5. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8.</li> <li>https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571</li> <li>Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN</li> <li>ARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: 4757308.</li> <li>utbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN</li> <li>ntsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.</li> <li>9. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.</li> <li>04. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.</li> </ul>							

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.

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

## **Course language:**

Slovak language

## Notes:

## **Course assessment**

Total number of assessed students: 5846

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
82.54	0.27	0.03	0.0	0.0	0.0	8.24	8.91

**Provides:** Mgr. Marcel Čurgali, Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., Mgr. Alena Buková, PhD., univerzitná docentka, doc. PaedDr. Ivan Uher, MPH, PhD., prof. RNDr. Stanislav Vokál, DrSc., Mgr. Zuzana Küchelová, PhD., Mgr. Ferdinand Salonna, PhD.

Date of last modification: 07.02.2024

University: P. J. Šafá	rik University in Košice					
Faculty: Faculty of S	cience					
Course ID: ÚCHV/ SVK1/00	Course ID: ÚCHV/ Course name: Students Scientific Conference (Presentation)					
Course type, scope a Course type: Recommended cour Per week: Per stud Course method: pre	nd the method: rse-load (hours): ly period: esent					
Number of ECTS cr	edits: 4					
Recommended seme	ster/trimester of the cours	<b>e:</b> 2., 4.				
Course level: II.						
Prerequisities:						
Conditions for cours	e completion:					
Learning outcomes:						
Brief outline of the c	ourse:					
Recommended litera	iture:					
Course language:						
Notes:						
<b>Course assessment</b> Total number of asse	ssed students: 33					
	abs	n				
	100.0	0.0				
Provides: prof. RND: Yaroslav Bazel', DrSc RNDr. Ladislav Janov RNDr. Mariana Budo PhD., RNDr. Monika Kudličková, PhD., RN PhD., Serhii Zaruba, I doc. RNDr. Katarína PhD.	r. Andrej Oriňak, PhD., prof ., doc. RNDr. Miroslava Ma /ec, PhD., RNDr. Slávka Ha vská, PhD., RNDr. Ján Eleč Tvrdoňová, PhD., doc. RNI NDr. Jana Šandrejová, PhD., PhD., prof. Mgr. Vasil' Andr Reiffová, PhD., RNDr. Rast	RNDr. Renáta Oriňaková, DrSc., prof. Dr. rtinková, PhD., univerzitná profesorka, doc. muľaková, PhD., univerzitná docentka, doc. ko, PhD., RNDr. Jana Špaková Raschmanová, Dr. Mária Vilková, PhD., RNDr. Zuzana univerzitná docentka, prof. Dr. Andrii Vyshnikin, uch, DSc., doc. RNDr. Taťána Gondová, CSc., islav Serbin, PhD., doc. Ing. Viera Vojteková,				
Date of last modifica	tion: 01.12.2021					

University: P. J. Šafárik University in Košice						
Faculty: Faculty of Science						
Course ID: ÚTVŠ/       Course name: Summer Course-Rafting of TISA River         LKSp/13       Course name: Summer Course-Rafting of TISA River						
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present						
Number of ECTS credits: 2						
Recommended semester/trimester of the course:						
Course level: I., II., P						
Prerequisities:						
Conditions for course completion: Completion: passed Condition for successful course completion: - active participation in line with the study rule of procedure and course guidelines - effective performance of all tasks: carrying a canoe, entering and exiting a canoe, righting a canoe, paddling						
Learning outcomes: Content standard: The student demonstrates relevant knowledge and skills in the field, which content is defined in the course syllabus and recommended literature. Performance standard: Upon completion of the course students are able to meet the performance standard and: - implement the acquired knowledge in different situations and practice, - implement basic skills to manipulate a canoe on a waterway, - determine the right spot for camping, - prepare a suitable material and equipment for camping.						
Brief outline of the course:Brief outline of the course:1. Assessment of difficulty of waterways2. Safety rules for rafting3. Setting up a crew4. Practical skills training using an empty canoe5. Canoe lifting and carrying6. Putting the canoe in the water without a shore contact7. Getting in the canoe8. Exiting the canoe9. Taking the canoe out of the water10. Steeringa) The pry stroke (on fast waterways)b) The draw stroke						

11. Capsizing					
12. Commands					
Recommended literature:					
1. JUNGER, J. et al. Turistika a športy v prírode. Prešov: FHPV PU v Prešove. 2002. ISBN					
8080680973.					
1 STEISKAL T Vodná turistika Pročov:	DLL v Brožovo 1000				
Dostupné na: https://ulozto.sk/tamhle/Ukv	xO2lYF8ah/name/Nahrane-7-5-2021-v-14-46-39#!				
ZGDjBGR2AQtkAzVkAzLkLJWuLwWx2	Z2ukBRLjnGqSomICMmOyZN==				
Course language:					
Slovak language					
Notes:					
Course assessment					
Total number of assessed students: 232					
abs	n				
36.64 63.36					
Provides: Mgr. Dávid Kaško, PhD.					
Date of last modification: 29.03.2022					
Approved: prof. Dr. Yaroslav Bazel', DrSc.					

University: P. J. Šafá	University: P. J. Šafárik University in Košice						
Faculty: Faculty of S	Faculty: Faculty of Science						
Course ID: ÚTVŠ/ KP/12	Course name: Survival Course						
Course type, scope a Course type: Practic Recommended cour Per week: 2 Per stu Course method: pre	nd the method: ce cse-load (hours): dy period: 28 esent						
Number of ECTS cr	edits: 2						
Recommended seme	ster/trimester of the course:						
Course level: I., II., F							
Prerequisities:							
Conditions for cours Completion: passed Condition for success - active participation - effective performan	e completion: ful course completion: in line with the study rule of procedure and course guidelines, ce of all the tasks defined in the course syllabus						
Learning outcomes: Content standard: The student demonstr course syllabus and r Performance standard Upon completion of t - acquire knowledge - obtain theoretical kr connected with surviv - be able to resist a environment, - be able implement children and youth w	ates relevant knowledge and skills in the field, which content is defined in the ecommended literature. 1: he course students are able to meet the performance standard and should: about safe stay and movement in natural environment, nowledge and practical skills to solve extraordinary and demanding situations val and minimization of damage to health, nd face situations related to overcoming barriers and obstacles in natural the acquired knowledge as an instructor during summer sport camps for ithin recreational sport.						
<ul> <li>Brief outline of the c</li> <li>Brief outline of the co</li> <li>Principles of condu</li> <li>Preparation and gu</li> <li>Objective and subj</li> <li>Principles of hygie</li> <li>Fire building</li> <li>Movement in the u</li> <li>Shelters</li> <li>Food preparation a</li> <li>Rappelling, Tyrolia</li> <li>Transport of an ir</li> </ul>	ourse: ourse: ict and safety in the movement in unfamiliar natural environment idance of a hike tour ective danger in the mountains ne and prevention of damage to health in extreme conditions nfamiliar terrain, orientation and navigation nd water filtering an traverse jured person, first aid						

#### **Recommended literature:**

1. JUNGER, J. et al. Turistika a športy v prírode. Prešov: Fakulta humanitných a prírodných vied PU v Prešove. 2002. 267s. ISBN 80-8068-097-3.

n

53.8

PAVLÍČEK, J. Člověk v drsné přírodě. 3. vyd. Praha: Práh. 2002. ISBN 8072520598.
 WISEMAN, J. SAS: příručka jak přežít. Praha: Svojtka & Co. 2004. 566s. ISBN 8072372807.

#### **Course language:**

Slovak language

#### Notes:

## Course assessment

Total number of assessed students: 461

abs

46.2

Provides: Mgr. Ladislav Kručanica, PhD.

Date of last modification: 16.05.2023

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

Course ID: ÚCHV/	Course name: Water Pretreatment
ATV1/04	

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

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

Course method: present

**Number of ECTS credits:** 6

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

Course level: II.

Prerequisities:

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

Active participation in laboratory exercises and seminars; successful completion of the final test. Elaboration of 2 written assignments (or project), which will be one of the conditions for participation in the exam. Written test (50%) and oral examination (50%) during the examination period.

Participation in excursions to the municipal wastewater treatment plant and drinking water treatment plant.

Note: Detailed conditions are updated annually within the repository for digital support materials (LMS UPJŠ).

#### Learning outcomes:

The student acquires knowledge of the methods of water pretreatment.

#### Brief outline of the course:

Classification of technological processes of water treatment according to phase processes, nature of the process, quality of treated water. Selection of resources for the supply of the population. Requirements for the treatment process. Water purification. Coagulation. Influence of various factors on coagulation. Water disinfection. Water fluoridation. Water softening methods. Water demineralization. Methods for removing Fe and Mn. Drinking water treatment plant. Scheme. Brief characteristics of individual stages of adjustment. Technological schemes and equipment.

Composition and properties of wastewater. Wastewater classification. Classification of industrial wastewaters. Stages of industrial wastewater treatment. Municipal wastewater treatment plant. Scheme. Technological process of wastewater treatment. Brief characteristics of individual stages. Technological schemes and equipment.

#### **Recommended literature:**

1. Žáček, L. Chemické a technologické procesy úpravy vody, Praha: SNTL, 1981. 270 s.

2. Tölgyessy J. a kol. Chémia, biológia a toxikológia vody a ovzdušia. Bratislava, VEDA, 1984.

3. Kalavská D., Holoubek I. Analýza vôd. Bratislava, Alfa, 1989. 262 s.

4. Handbook of Water and Wastewater Treatment Technologies. Ed. By Nicholas P Cheremisinoff, Butterworth Heinemann, 2001. 576 p.

Cheremisinon, Butterworth Heinemann, 2001. 576 p.

5. Principles of Water Quality Control, Ed. by Thy Tebbutt, Butterworth Heinemann, 1997. 288 p.

# Course language:

Slovak

# Notes:

The course is implemented by full-time or, if necessary, distance method using the MS Teams or BBB or a combined method. The form of teaching is specified by the teacher at the beginning of the semester and updated continuously.

# **Course assessment**

Total number of assessed students: 189

А	В	С	D	Е	FX
38.1	16.93	17.46	16.4	11.11	0.0

Provides: prof. Mgr. Vasil' Andruch, DSc., Serhii Zaruba, PhD.

# Date of last modification: 22.07.2022