

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ AAS1/03		Course name: Atomic Spectrochemistry			
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 credits: 6					
Recommended semester/trimester of the course: 1.					
Course level: II.					
Prerequisites:					
Conditions for course completion: On the basis of the practical results and seminary works. On the basis of continuous assessment and oral examination.					
Learning outcomes: Theoretical information and practical experience with atomic absorption and emission methods used in analytical chemistry.					
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. Absorption spectroscopy in the visible, ultraviolet and near-infrared region and its analytical applications.					
Recommended literature: I. Němcová, L. Čermáková, P. Rychlovský: Spektrometrické analytické metody. 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. Williams: Handbook of Analytical Techniques. Wiley-VCH, Weinheim, 2001. G. Gauglitz, T. Vo-Dinh: Handbook of Spectroscopy. Wiley-VCH, Weinheim, 2003.					
Course language:					
Course assessment Total number of assessed students: 80					
A	B	C	D	E	FX
37.5	22.5	22.5	12.5	5.0	0.0
Provides: doc. Ing. Viera Vojteková, PhD.					
Date of last modification: 24.02.2017					
Approved: Guarantee prof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ ACHSP/14/15		Course name: Analytical Chemistry			
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present					
Number of credits: 4					
Recommended semester/trimester of the course:					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 34					
A	B	C	D	E	FX
47.06	26.47	20.59	5.88	0.0	0.0
Provides:					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ ACM1/06		Course name: Chemometrics			
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 credits: 6					
Recommended semester/trimester of the course: 2.					
Course level: II.					
Prerequisites:					
Conditions for course completion: On the basis of the tests and seminary works On the basis of the continuous assesment and examination.					
Learning outcomes: Knowledge about the correct and theoretically based evaluation of analytical results and methods. Knowledge about the methods of validation and accreditation of laboratories. Knowledge about the result uncertainties and methods of decision statistics.					
Brief outline of the course: The principles of the mathematic- statistical methods used in analytical chemistry. Probability distribution of the measuring results. Classic and robust estimation of the mean value and variance. Statistical tests and their application. Accuracy, precision, and reliability of the results. Uncertainty of the results. Calibration in the analytical chemistry, linear and nonlinear models. Evaluation of the analytical methods, the chosen optimization approaches. Solving of the typical examples in the frame of the practical lectures.					
Recommended literature: R. G. Brereton: Chemometrics., Wiley, Chichester, 2003 M. Meloun, J. Militký: Kompendium statistického zpracování dat., Academia, Praha 2006					
Course language:					
Course assessment Total number of assessed students: 83					
A	B	C	D	E	FX
33.73	28.92	24.1	7.23	6.02	0.0
Provides: doc. Ing. Viera Vojteková, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ ACPE1/03		Course name: Industrial Ecology			
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 credits: 5					
Recommended semester/trimester of the course: 1.					
Course level: I., II.					
Prerequisites:					
Conditions for course completion: On the basis of the written tests and seminary work. On the basis of the continuous assessment and examination.					
Learning outcomes: The concept of industrial ecology in the frame of environmental chemistry.					
Brief outline of the course: The concept of industrial ecology. Selected topics of environmental chemistry in the context of industrial ecology. Selected topics of industrial, clinical toxicology and ecotoxicology.					
Recommended literature: S. E. Manahan: Industrial Ecology., CRC Press, New York, 1999. S. E. Manahan: Environmental Chemistry. , CRC Press, New York, 2005.					
Course language:					
Course assessment Total number of assessed students: 153					
A	B	C	D	E	FX
26.8	20.26	24.84	15.03	12.42	0.65
Provides: doc. Ing. Viera Vojteková, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KFaDF/AFS/05		Course name: Ancient Philosophy and Present Times			
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 credits: 2					
Recommended semester/trimester of the course: 2.					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 31					
A	B	C	D	E	FX
80.65	6.45	6.45	0.0	6.45	0.0
Provides: Doc. PhDr. Peter Nezník, CSc.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ ANCH2/06		Course name: Analytical Chemistry III.			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present					
Number of credits: 6					
Recommended semester/trimester of the course: 1.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Test Test					
Learning outcomes: Advanced theoretical and practical knowledge of of instrumental methods of analysis.					
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 spectrometry. Roentgen spectroscopic methods.					
Recommended literature: 1. H.H. Willard, L.L. Merritt, Jr., J.A. Dean, F.A. Settle, Jr.: Instrumental Methods of Analysis, Wadsworth Publ. Co., Belmont (CA) 1988, ISBN 0-534-08142-8					
Course language:					
Course assessment Total number of assessed students: 72					
A	B	C	D	E	FX
34.72	33.33	25.0	1.39	4.17	1.39
Provides: prof. Dr. Yaroslav Bazel', DrSc., prof. Mgr. Vasil' Andruch, DrSc.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ ANS/05		Course name: Analytical Sensors			
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 credits: 5					
Recommended semester/trimester of the course: 2.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Test Examination					
Learning outcomes: Getting a knowledge about the theoretical principles and application of the analytical sensors.					
Brief outline of the course: Optical sensors. Materials for optical sensors. Design of the optical biosensors. Electrochemical sensors.					
Recommended literature: 1. Janata J. Principles of Chemical Sensors, Plenum Press, London, 1989. 2. Lakowicz J. R. Principles of Fluorescence Spectroscopy, Plenum Press, New York, 1983. 3. Jameson D. M. Fluorescence Principles, Methodologies and Applications, CRC Press, 1984. 4. Narayanaswamy R., Wolfbeis O.S. Optical Sensors, Springer, 2004, 421 p. 5. Brinker C. J., Scherer G. W. Sol-gel Science, Academic Press, New York, 1990.					
Course language:					
Course assessment Total number of assessed students: 62					
A	B	C	D	E	FX
69.35	1.61	16.13	8.06	4.84	0.0
Provides: prof. Mgr. Vasil' Andruch, DrSc.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ AOL1/06		Course name: Analysis of Organic Substances			
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 credits: 6					
Recommended semester/trimester of the course: 2.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Examination.					
Learning outcomes: Methods of analysis of organic substances.					
Brief outline of the course: Characteristics, objectives, methods and basic procedures in qualitative and quantitative analysis of organic compounds (AOC). Evidence and identification, molecular, elemental and structural-analytical methods in AOC. Groups solubility, color and precipitation reactions, identification and determination of functional groups. Optical, electrochemical, separation and other methods used in analysis of organic compounds. Some examples of the use of knowledge for the purposes of research and practice.					
Recommended literature: 1. Jerry R. Mohrig et al. Organic Qualitative Analysis, W. H. Freeman and Company, 2003 2. H.T. Openshaw, A Laboratory Manual of Qualitative Organic Analysis, CUP Archive, 1976 3. Oliver Kamm, Qualitative organic analysis, John Wiley & Sons, 1923, Open Library					
Course language:					
Course assessment Total number of assessed students: 32					
A	B	C	D	E	FX
71.88	21.88	3.13	3.13	0.0	0.0
Provides: doc. RNDr. Katarína Reiffová, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ APC1/03		Course name: Practical Chromatography			
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 credits: 5					
Recommended semester/trimester of the course: 2.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Laboratory reports. Examination.					
Learning outcomes:					
Brief outline of the course: Practical aspects of chromatographic instrumentation. Characterisation of HPLC functional composition, injector, column, detectors, data evaluation, errors. Instrumentation in GC, injector, columns, detectors, data evaluation. Practical examples.					
Recommended literature: Dean, R.: A Practical Guide to the Care, Maintenance, and Troubleshooting of Capillary Gas Chromatographic Systems. Huthig, Heidelberg, 1991. Grob, K.: On-Line Coupled LC-GC. Huthig, Heidelberg 1991.					
Course language:					
Course assessment Total number of assessed students: 21					
A	B	C	D	E	FX
85.71	4.76	4.76	4.76	0.0	0.0
Provides: prof. RNDr. Andrej Oriňak, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/APO1/02		Course name: Analysis of Psychotropic and Narcotic Substances			
Course type, scope and the method: Course type: Lecture Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of credits: 4					
Recommended semester/trimester of the course: 3.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Examination					
Learning outcomes: Survey of classification, effects/mechanism and properties of psychotropic and narcotic substances, drug dependences and methods used in the (toxicological) analysis of drugs.					
Brief outline of the course: Drug, drug dependence. Psychotropic and narcotic substances - classification, properties and laws. Dose and tolerance, therapy, prevention. Pharmacokinetics of the drug. Biological effects, biotransformations, receptors. The methods used in the analysis of the drugs (clinical, forensic analysis) - opiates, cocaine, amphetamines and their analogues, hallucinogenics, cannabis products, etc.					
Recommended literature: 1. M. D. Cole: The Analysis of Controlled Substances, Wiley 2003. 2. E. Hodgson: A Textbook of Modern Toxicology, Wiley 2004.					
Course language:					
Course assessment Total number of assessed students: 227					
A	B	C	D	E	FX
95.15	3.96	0.88	0.0	0.0	0.0
Provides: doc. RNDr. Taťána Gondová, CSc.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ ATV1/04		Course name: Water Pretreatment			
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 credits: 6					
Recommended semester/trimester of the course: 2., 4.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Test Examination					
Learning outcomes: Getting a knowledge about the methods of water pretreatment.					
Brief outline of the course: Disinfection of drinking water. Fluoridation of drinking water. Water softening and demineralisation. Waste water. Neutralization of wastewater. Oxidation of wastewater. Physico-chemical methods of waste water treatment. Biological treatment of wastewater.					
Recommended literature: 1. Handbook of Water and Wastewater Treatment Technologies. Ed. By Nicholas P Cheremisinoff, Butterworth Heinemann, 2001. 576 p. 2. Principles of Water Quality Control, Ed. by Thy Tebbutt, Butterworth Heinemann, 1997. 288 p. 3. Water Technology. Ed. by N. F. Gray, Butterworth Heinemann, 2005. 600 p.					
Course language:					
Course assessment Total number of assessed students: 164					
A	B	C	D	E	FX
36.59	14.02	18.29	18.29	12.8	0.0
Provides: prof. Mgr. Vasil' Andruch, DrSc.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ AVZ1/02		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 credits: 5					
Recommended semester/trimester of the course: 2.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Examination.					
Learning outcomes:					
Brief outline of the course: Analytical sample, characterisation. Sampling and norms effecting sampling process. Quantity, number of samples. Sampling techniques. Sampling laboratory equipment. Sampling techniques. Sample pre-concentration. Sample storing and conservation. Matrix simplifying, specific analysis. Chromatographic sample pre-treatment.					
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 language:					
Course assessment Total number of assessed students: 192					
A	B	C	D	E	FX
60.94	21.35	12.5	4.17	1.04	0.0
Provides: prof. RNDr. Andrej Oriňak, PhD., Mgr. Ján Macko, PhD., Mgr. Marek Hruška					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ AZP1/04		Course name: Environmental Analytical Chemistry			
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 credits: 6					
Recommended semester/trimester of the course: 1., 3.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Test Examination					
Learning outcomes: Getting a knowledge about the methods of environmental analysis.					
Brief outline of the course: Sampling techniques and sample pretreatment in environmental analysis. Quality assurance for environmental analysis. Good laboratory practice. Application of the chemometric tools in environmental analysis. Analysis of water, soil, ore, sediment, air, food samples. Analysis of environmental samples by spectroscopic methods. Separation techniques in environmental analysis. Application of electrochemical methods for environmental samples.					
Recommended literature: 1. A.M. Ure, C.M. Davidson, Chemical Speciation in the Environment. Blackie, London 1995. 2. J.R. Dean, Extraction Methods for Environmental Analysis. Wiley, 1988. 3. H.D. Belitz, W. Grosch, P. Schieberle, Food Chemistry, Springer Verlag, 2004.					
Course language:					
Course assessment Total number of assessed students: 235					
A	B	C	D	E	FX
45.96	15.74	18.3	7.66	12.34	0.0
Provides: prof. Mgr. Vasil' Andruch, DrSc., RNDr. Rastislav Serbin, PhD., RNDr. Jana Šandrejová, PhD., RNDr. Livia Kocúrová, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ BACH1/03		Course name: Bioanalytical Chemistry			
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 credits: 5					
Recommended semester/trimester of the course: 1.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Written test 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. Mechanism of enzyme catalysis. Enzymes like analytes and analytical reagents. Moderators of enzyme activity. Introduction to Immunochemical methods, Precipitation and Agglutination methods. 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:					
Course assessment Total number of assessed students: 85					
A	B	C	D	E	FX
34.12	35.29	18.82	10.59	1.18	0.0

Provides: doc. RNDr. Katarína Reiffová, PhD.
Date of last modification: 24.02.2017
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ BFC1a/01	Course name: Biophysical Chemistry I
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 2 Per study period: 28 / 28 Course method: present	
Number of credits: 5	
Recommended semester/trimester of the course: 1., 3.	
Course level: II.	
Prerequisites:	
Conditions for course completion: Examination	
Learning outcomes:	
Brief outline of the course: Matter and its demonstration in living systems Space and time connections in biological systems Energy and mass connections in biological systems Physicochemical properties of water and cell liquids Reaction kinetics Ligand binding Nonequilibrium thermodynamics Dynamics of conservative systems, chaos Dissipative systems, attractors Stability of biomacromolecules Interfaces and membranes, membrane transports Dynamics of complex biochemical process Structuralization of biosystems induced by diffusion	
Recommended literature: Cantor, C.R., Schimmel, P.R. Biophysical Chemistry, W.H. Freeman and Co., S. Francisco, 1980 P. Glansdorff, I. Prigogine, Thermodynamics theory of structure, stability and fluctuations, Willey 1971 Voet, D. Voet, J.G. Biochemistry, John Wiley & Sons, 1990 Kersal E. van Holde, W. Curtis Johnson, P. Shing Ho: Principles of Physical Biochemistry, Prentice Hall, 1998 Articles from Journals Marschall, A.G., Biophysical Chemistry, John Wiley & Sons, N.York, 1978 Hoppe, W., Lohmann, W., Markl, H., Ziegler, H., (eds.), Biophysics, Springer V., Berlin, 1983 Peitgen, H. O., Jurgens, H., Saupe, D., Fractals for the Classroom, Springer-Verlag, NY, 1992 Avnir, D. (ed.), The Fractal Approach to Heterogeneous Chemistry, John Wiley & S., NY, 1989 Winfree, A. T., The Geometry of Biological Time, Springer-Verlag, NY, 1980 Harrison, L. G., Kinetic Theory of Living Pattern, Cambridge Univ. Press., NY, 1993	

Course language:					
Course assessment					
Total number of assessed students: 152					
A	B	C	D	E	FX
13.16	17.11	34.21	23.68	11.84	0.0
Provides: prof. Ing. Marián Antalík, DrSc.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ CHHS/07		Course name: Hydrochemistry			
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 credits: 6					
Recommended semester/trimester of the course: 1., 3.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Test Examination					
Learning outcomes: Getting a knowledge about the hydrochemistry.					
Brief outline of the course: Types of natural waters and their properties. Chemical content and properties of nature water. Surface waters. Chemical content and properties of surface waters. Fundamentals of aquatic chemistry. The hydrologic cycle. Mineral waters, their classification. Chemical content and properties of mineral waters. Underground water. Processes influencing the content of underground water. Sea water. Waste water. Content and properties of waste water. Basic strages of water analysis. Sampling. Physical properties of water. Methods of analysis of water chemical content. Biochemical oxygen demand. Dissolved oxygen. Distributing diagrams. Interaction of content of water and sediments. Test-methods in water analysis. Automatic monitoring stations. Sensor systems. Requirements for water quality.					
Recommended literature: 1. Handbook of Water and Wastewater Treatment Technologies. Ed. By Nicholas P Cheremisinoff, Butterworth Heinemann, 2001. 576 p. 2. Principles of Water Quality Control, Ed. by Thy Tebbutt, Butterworth Heinemann, 1997. 288 p. 3. Water Technology. Ed. by N. F. Gray, Butterworth Heinemann, 2005. 600 p.					
Course language:					
Course assessment Total number of assessed students: 103					
A	B	C	D	E	FX
26.21	21.36	16.5	19.42	16.5	0.0
Provides: prof. Mgr. Vasiľ Andruch, DrSc., RNDr. Rastislav Serbin, PhD., RNDr. Livia Kocúrová, PhD.					

Date of last modification: 24.02.2017
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ CHRA1/03		Course name: Chromatographic Analysis			
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 credits: 6					
Recommended semester/trimester of the course: 1., 3.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Examination.					
Learning outcomes:					
Brief outline of the course: General characteristics of chromatographic system and chromatographic separation. Analyte retention in chromatography, retention indices. Models used for chromatographic system description. Parameters affecting quality of chromatographic separation. Sensitivity, separated analytes, separation time, optimisation of chromatographic process. General equation of chromatography. Evaluation of retention and selectivity of chromatographic process. Stationary phase. Qualitative chromatographic analysis. Quantitative analysis methods, sample preparation. System of analyte separation. Identification in chromatographic analysis.					
Recommended literature: D. A. Skoog, J. J. Leary: Principles of Instrumental Analysis, Saunders, 1992.					
Course language:					
Course assessment Total number of assessed students: 59					
A	B	C	D	E	FX
83.05	6.78	6.78	0.0	3.39	0.0
Provides: prof. RNDr. Andrej Oriňak, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KFaDF/DF2p/03		Course name: History of Philosophy 2 (General Introduction)			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 1 Per study period: 28 / 14 Course method: present					
Number of credits: 4					
Recommended semester/trimester of the course:					
Course level: I., II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 734					
A	B	C	D	E	FX
60.63	13.9	12.67	8.72	3.41	0.68
Provides: doc. PhDr. Pavol Tholt, PhD., mim. prof., Doc. PhDr. Peter Nezník, CSc., PhDr. Katarína Mayerová, PhD., doc. Mgr. Róbert Stojka, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ DPO/14		Course name: Diploma Thesis and its Defence			
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present					
Number of credits: 20					
Recommended semester/trimester of the course:					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 99					
A	B	C	D	E	FX
67.68	24.24	4.04	2.02	2.02	0.0
Provides:					
Date of last modification: 27.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ EMDP/03		Course name: Experimental Methods to Master's Thesis			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 6 Per study period: 84 Course method: present					
Number of credits: 6					
Recommended semester/trimester of the course: 3.					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 316					
A	B	C	D	E	FX
94.94	2.85	0.63	0.63	0.95	0.0
Provides: RNDr. Martin Vavra, PhD., doc. RNDr. Peter Pristaš, CSc., doc. RNDr. Peter Javorský, DrSc., doc. RNDr. Ján Imrich, CSc., doc. RNDr. Mária Kožurková, CSc., prof. Ing. Marián Antalík, DrSc., prof. RNDr. Juraj Černák, DrSc., prof. RNDr. Jozef Gonda, DrSc., prof. RNDr. Andrej Oriňak, PhD., doc. RNDr. Zuzana Vargová, Ph.D., doc. RNDr. Taťána Gondová, CSc., doc. RNDr. Miroslava Martinková, PhD., prof. RNDr. Renáta Oriňaková, DrSc., doc. RNDr. Ivan Potočňák, PhD., doc. RNDr. Erik Sedlák, PhD., doc. RNDr. Vladimír Zeleňák, PhD., doc. RNDr. Viktor Víglaský, PhD., doc. RNDr. Katarína Reiffová, PhD., RNDr. Miroslava Matiková-Maľarová, PhD., doc. RNDr. Juraj Kuchár, PhD., RNDr. Nataša Tomášková, PhD., RNDr. Andrea Morovská Turoňová, PhD., RNDr. Dušan Koščík, CSc., RNDr. Daniela Kladeková, CSc., RNDr. Slávka Hamul'áková, PhD., RNDr. Rastislav Varhač, PhD., RNDr. Danica Sabolová, PhD., RNDr. Zuzana Kudličková, PhD., RNDr. Lívia Kocúrová, PhD., prof. Mgr. Vasil' Andruch, DrSc., prof. Dr. Yaroslav Bazel', DrSc., RNDr. Ladislav Janovec, PhD., doc. Ing. Viera Vojteková, PhD., doc. RNDr. Andrea Straková Fedorková, PhD., Mgr. Miroslav Almáši, PhD.					
Date of last modification: 27.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ EMST/05		Course name: Electrophoretic Methods			
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 credits: 5					
Recommended semester/trimester of the course: 1.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Examination					
Learning outcomes: Basic principles of electromigration techniques and their application in practise.					
Brief outline of the course: Principles and classification of electromigration techniques - Zone electrophoresis, The moving boundary method, Focusing methods, Capillary isotachopheresis (cITP), Capillary zone electrophoresis (CZE). Principle of separation in an electric field, the phenomena accompanying separation in an electric field - electroosmotic pressure, Joule heat, diffusion, gravity, adsorption, instrumentation, detection, qualitative and quantitative analysis, electrophoretic separation on a microchip. Micellar electrokinetic chromatography (MEKC).					
Recommended literature: 1. Handbook of Capillary Electrophoresis, 2nd Ed., CRC, Boca Raton, 1997 2. P. Boček: Basic course and Advanced course of Isotachopheresis, Institute of Analytical Chemistry, Czech Academy of Science, Brno, 1984					
Course language:					
Course assessment Total number of assessed students: 6					
A	B	C	D	E	FX
16.67	83.33	0.0	0.0	0.0	0.0
Provides: doc. RNDr. Katarína Reiffová, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazef, DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KFaDF/IH2/03		Course name: Idea Humanitas 2 (General Introduction)			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of credits: 2					
Recommended semester/trimester of the course: 3.					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 8					
A	B	C	D	E	FX
87.5	12.5	0.0	0.0	0.0	0.0
Provides: Doc. PhDr. Peter Nezník, CSc.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: ÚCHV/IMS1/03		Course name: Mass Spectrometric Identification					
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 credits: 4							
Recommended semester/trimester of the course: 1., 3.							
Course level: II., III.							
Prerequisites:							
Conditions for course completion:							
Learning outcomes:							
Brief outline of the course: General principles of mass spectrometry. Analytical mass spectrometry. Detectors in mass spectrometry and resolution. Quadrupoles, ion traps, TOF analyzers. Analytes ionization, molecular spectra obtained from different ion sources. Identification with MS. Determination of molar mass. Fragmentation, spectra, and structural information. Identification by spectra comparison. Total ion current. Monitoring of selected ion/fragment. The use of hyphenated and coupled chromatographic methods. Tandem MS-MS, GC-MSD, HPLC-MS, microcolumn application. MALDI ToF MS, ToF SIMS and methods of surface analysis. Evaluation of mass spectrum.							
Recommended literature:							
Course language:							
Course assessment Total number of assessed students: 1							
A	B	C	D	E	FX	N	P
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Provides: prof. RNDr. Andrej Oriňak, PhD.							
Date of last modification: 24.02.2017							
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.							

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ JCH1/04		Course name: Nuclear Chemistry			
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 credits: 5					
Recommended semester/trimester of the course: 2.					
Course level: I., II.					
Prerequisites:					
Conditions for course completion: Test. Examination.					
Learning outcomes: To explain a basic of radioactivity and nuclear reactions. The course is to provide the students with a knowledge of preparation of the radionuclides and its use in the technical practise, to give the survey of biological effects of nuclear radiation.					
Brief outline of the course: Fundamentals of nuclear chemistry. Elementary particles. Nuclear core. Nuclides and isotopes. Radioactivity and radioactive disintegration kinetics. Radioactive disintegration. Decay law. Half life period. Units of radioactivity. Nuclear reactions. Sources of nuclear radiation. Detection and registration of radiation. Nuclear chemical technology. Radioactive analytical methods. Isotopic dilution method, activation analysis. Biological effects of the nuclear radiation. Nuclear medicine. Nuclear power station.					
Recommended literature: G. R. Choppin, J. Rydberg: Nuclear Chemistry, Theory and Applications, Pergamon Press, 1980. G. R. Choppin, J. O. Liljenzin, J. Rydberg: Radiochemistry and Nuclear Chemistry, 3rd edition, Woburn, USA, Butterworth-Heinemann, 2002. W. D. Ehmann, D. E. Vance: Radiochemistry and Nuclear Methods of Analysis, Wiley, New York, 1991. A. Vértes, I. Kiss: Nuclear Chemistry, Elsevier, 1987.					
Course language:					
Course assessment Total number of assessed students: 37					
A	B	C	D	E	FX
37.84	24.32	18.92	10.81	5.41	2.7
Provides: RNDr. Andrea Morovská Turoňová, PhD., RNDr. František Kaľavský					
Date of last modification: 24.02.2017					

Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ KCHR/06		Course name: Liquid Chromatography			
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 credits: 5					
Recommended semester/trimester of the course: 1.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Examination					
Learning outcomes: Advanced knowledges about LC applications					
Brief outline of the course: Theoretical principles of liquid chromatography. Selection and optimisation of separation process. Sample pretreatment. New trends in HPLC techniques - uLC, chiral analysis, multidimensional chromatography, combined systems with LC. Applications.					
Recommended literature: Skoog D.A.: Principles of Instrumental Analysis. Saunders, New York 1985. Mondello L., Lewis A.C., Bartle K.D.: Multidimensional Chromatography, Wiley, 2002.					
Course language:					
Course assessment Total number of assessed students: 44					
A	B	C	D	E	FX
59.09	31.82	6.82	2.27	0.0	0.0
Provides: doc. RNDr. Taťána Gondová, CSc.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KFaDF/ KDF/05		Course name: Chapters from History of Philosophy of 19th and 20th Centuries (General Introduction)			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of credits: 2					
Recommended semester/trimester of the course: 2.					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 10					
A	B	C	D	E	FX
50.0	20.0	10.0	0.0	10.0	10.0
Provides: doc. PhDr. Pavol Tholt, PhD., mim. prof.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice		
Faculty: Faculty of Science		
Course ID: KPPaPZ/KK/07	Course name: Communication and Cooperation	
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 credits: 2		
Recommended semester/trimester of the course: 3.		
Course level: II.		
Prerequisites:		
Conditions for course completion:		
Learning outcomes:		
Brief outline of the course:		
Recommended literature:		
Course language:		
Course assessment Total number of assessed students: 281		
abs	n	z
98.22	1.78	0.0
Provides: Mgr. Ondrej Kalina, PhD., Mgr. Lucia Hricová, PhD.		
Date of last modification: 16.02.2017		
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.		

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ KP/12	Course name: Survival Course
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: Per study period: 36s Course method: present	
Number of credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisites:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 329	
abs	n
47.11	52.89
Provides: MUDr. Peter Dombrovský, Mgr. Marek Valanský	
Date of last modification: 23.02.2017	
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ LKSp/13	Course name: Summer Course-Rafting of TISA River
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: Per study period: 36s Course method: present	
Number of credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisites:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 126	
abs	n
45.24	54.76
Provides: Mgr. Peter Bakalár, PhD.	
Date of last modification: 23.02.2017	
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ MOL/06		Course name: Molecular Spectrometry			
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 credits: 6					
Recommended semester/trimester of the course: 2.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Test Test					
Learning outcomes: Advanced theoretical and practical knowledge of the methods of molecular spectroscopy.					
Brief outline of the course: Molekular spectrophotometry (Ultra-Violet, Visible, Infrared) for Chemical Analysis. Fourier Transform Infrared. Raman spectrometry. Microwave spectrometry. Electron Paramagnetic Resonance. Nuclear Magnetic Resonance.					
Recommended literature: E.D.Olsen. Modern optical methods of analysis. McGraw-Hill, Inc. 1975. A.Skoog, J.J.Leary. Instrumentelle Analytic. Springer. Berlin-Heidelberg. 1996.					
Course language:					
Course assessment Total number of assessed students: 50					
A	B	C	D	E	FX
40.0	32.0	22.0	6.0	0.0	0.0
Provides: prof. Dr. Yaroslav Bazel', DrSc., RNDr. Rastislav Serbin, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ MSO1/03		Course name: Wastes Treatment Methods			
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 credits: 4					
Recommended semester/trimester of the course: 3.					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course: Wastes clasiffication, wastes separation. Re-cycling of wastes, methods of wastes elimination and re-finishing. Pyrolysis, degradation of wastes by pyrolysis, process optimization. Analytical methods for wastes analysis. Monitoring of wastes degradation pollutants, toxicity of wastes and degradation products.					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 68					
A	B	C	D	E	FX
70.59	26.47	2.94	0.0	0.0	0.0
Provides: Mgr. Mária Sabalová, PhD., Mgr. Ján Macko, PhD., Mgr. Marek Hruška					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ NMR1/00	Course name: 1D & 2D NMR Spectroscopy
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 2 / 3 Per study period: 28 / 42 Course method: present	
Number of credits: 6	
Recommended semester/trimester of the course: 2.	
Course level: II.	
Prerequisites:	
Conditions for course completion: Active student's work at seminars and individual homework, written examinations in 7th and 14th semestral week. Terminal examination in written form (4 exercises from combined applications of 1D a 2D NMR and other spectral methods) and oral form (3 themes) joining theoretical knowledge with a practical solution of selected NMR problems and exercises.	
Learning outcomes: Students will learn how to analyze structure and properties of organic, inorganic and biomolecular compounds by 1D and 2D proton and carbon NMR spectra, quantitative NMR analysis, and practical applications in various fields of science and technology.	
Brief outline of the course: Theoretical principles of nuclear magnetic resonance (NMR), basic NMR pulse techniques and Fourier transformation, NMR spectrometers, description of NMR by vector models. Parameters of one- (1D) and two-dimensional (2D) NMR spectra, practical application of ¹ H and ¹³ C NMR spectra and basic correlated 2D spectra for structure and stereochemical arrangement, elucidation of reaction mechanisms, molecular dynamics, physico-chemical properties and quantitative analysis of chemical compounds.	
Recommended literature: <ol style="list-style-type: none"> 1. Friebolin H.: Basic One- and Two-Dimensional NMR Spectroscopy, 5. Ed., Wiley, 2010. 2. T. D. W. Claridge: High-Resolution NMR Techniques in Organic Chemistry, Elsevier, 1999. 3. Atta-ur-Rahman, M. I. Choudhary: Solving Problems with NMR spectroscopy, Academic Press 1996. 4. H.-O. Kalinowski, S. Berger, S. Braun: Carbon-13 NMR Spectroscopy. Wiley, New York 1988. 5. A. E. Derome: Modern NMR Techniques for Chemistry Research. Pergamon Press, Oxford 1987. 6. E. Pretsch, B. Buhlmann, C. Affolter: Structure Determination of Organic Compounds. Tables of Spectral Data. Springer Verlag, Berlin 2000. 7. E. Breitmaier: Structure Elucidation by NMR in Organic Chemistry: A Practical Guide, 3rd Ed., Wiley, 2002. 8. E. Breitmaier, W. Voelter: Carbon-13 NMR Spectroscopy. VCH Weinheim, 1990. 	

Course language:					
Course assessment					
Total number of assessed students: 151					
A	B	C	D	E	FX
38.41	25.83	23.84	9.93	1.99	0.0
Provides: doc. RNDr. Ján Imrich, CSc.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ PBACH1/03		Course name: Practical in Bioanalytical Chemistry			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 3 Per study period: 42 Course method: present					
Number of credits: 3					
Recommended semester/trimester of the course: 2., 4.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Assessment					
Learning outcomes: Application of theoretical knowledge to bioanalytical laboratory practise					
Brief outline of the course: Analytical chemistry in laboratory medicine, basic analysis of biological systems, the nature and processing of biological samples, enzymes in bioanalysis, immunochemical methods, radioimunoanalytical methods (RIA), electrophoretic methods, analytical significance of nucleic acid, selected separation methods for the analysis of biomolecules.					
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:					
Course assessment Total number of assessed students: 0					
A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
Provides: doc. RNDr. Katarína Reiffová, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazef, DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ PC1/06		Course name: Gas Chromatography			
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 credits: 5					
Recommended semester/trimester of the course: 2.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Laboratory report. Exam.					
Learning outcomes: Detailed information about GC application.					
Brief outline of the course: Introduction to gas chromatography, basic description of chromatographic process. Chromatographic parameters. Gas chromatography, retention volume, relation between V_g and K . Mobile phase flow rate effect. Mobile phase origin effect. Sample injection in GC. Direct injection into hot injector. split and splitless injection, on-column injection, injector with programmed temperature. Injection by thermodesorption, pyrolysis injector. Valves and loops. Detailed variations in GC sampling. Chromatographic columns in GC. Stationary phase effects. SOL-GEL and FORTE columns. Detection in GC. Microdetectors and integrated systems. Multidimensional GC, tandem GC, hyphenated GC. Qualitative and quantitative analysis. Novel application in GC. Supercritical GC.					
Recommended literature: 1. D.A. Skoog, J.J. Leary: Principles of Instrumental Analysis, Saunders, 1992. 2. K. Grob: On-Column Injection in Capillary Gas Chromatography. Huthig, 1991.					
Course language:					
Course assessment Total number of assessed students: 51					
A	B	C	D	E	FX
62.75	17.65	11.76	3.92	3.92	0.0
Provides: prof. RNDr. Andrej Oriňak, PhD.					
Date of last modification: 24.02.2017					
Approved: Guarantee prof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: Dek. PF UPJŠ/PPZ/13		Course name: Personality Development and Key Competences for Success on a Labour Market			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: Per study period: 14s Course method: present					
Number of credits: 2					
Recommended semester/trimester of the course: 1., 3.					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 39					
A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0
Provides: RNDr. Peter Stefányi, PhD.					
Date of last modification: 13.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KPPaPZ/PPZMg/12		Course name: Psychology and Health Psychology (Master's Study)			
Course type, scope and the method: Course type: Lecture / Practice Recommended course-load (hours): Per week: 1 / 2 Per study period: 14 / 28 Course method: present					
Number of credits: 4					
Recommended semester/trimester of the course:					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 226					
A	B	C	D	E	FX
19.47	25.22	25.66	13.27	15.93	0.44
Provides: PhDr. Anna Janovská, PhD., Mgr. Lucia Hricová, PhD.					
Date of last modification: 16.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ RP/14	Course name: Class Project
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present	
Number of credits: 6	
Recommended semester/trimester of the course: 2.	
Course level: II.	
Prerequisites:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 121	
abs	n
98.35	1.65
Provides: Mgr. Miroslav Almáši, PhD., RNDr. Nataša Tomášková, PhD., RNDr. Danica Sabolová, PhD., doc. RNDr. Mária Kožurková, CSc., RNDr. Rastislav Varhač, PhD.	
Date of last modification: 24.02.2017	
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/SDP/03		Course name: Seminar to Diploma Thesis			
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present					
Number of credits: 2					
Recommended semester/trimester of the course: 3.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Consultations, discussions and presentations. Assessment of student's work during the semester by supervisor.					
Learning outcomes: Teach the student to prepare presentation of his own results, critical acceptance of information, participate in scientific discussion and formal requirements of written diploma work.					
Brief outline of the course: Presentation of literature information and own experimental results, scientific discussions and writing of scientific text.					
Recommended literature: According to the field of diploma work.					
Course language:					
Course assessment Total number of assessed students: 259					
A	B	C	D	E	FX
95.37	2.7	1.16	0.39	0.0	0.39
Provides: doc. RNDr. Andrea Straková Fedorková, PhD., doc. RNDr. Mária Kožurková, CSc., doc. RNDr. Ján Imrich, CSc., prof. RNDr. Katarína Györyová, DrSc., prof. RNDr. Juraj Černák, DrSc., prof. RNDr. Andrej Oriňák, PhD., prof. RNDr. Jozef Gonda, DrSc., doc. Ing. Viera Vojteková, PhD., doc. RNDr. Katarína Reiffová, PhD., doc. RNDr. Tat'ána Gondová, CSc., doc. RNDr. Mária Reháková, CSc., doc. RNDr. Miroslava Martinková, PhD., doc. RNDr. Zuzana Vargová, Ph.D., doc. RNDr. Vladimír Zeleňák, PhD., doc. RNDr. Ivan Potočňák, PhD., prof. RNDr. Renáta Oriňáková, DrSc., RNDr. Dušan Koščík, CSc., RNDr. Andrea Morovská Turoňová, PhD., RNDr. Slávka Hamul'aková, PhD., RNDr. Ladislav Janovec, PhD., RNDr. Zuzana Kudličková, PhD., RNDr. Livia Kocúrová, PhD., prof. Mgr. Vasil' Andruch, DrSc., prof. Dr. Yaroslav Bazel', DrSc.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ SKACH1/06		Course name: Forensic and Clinical Analytical Chemistry			
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 credits: 5					
Recommended semester/trimester of the course: 2., 4.					
Course level: II.					
Prerequisites:					
Conditions for course completion: Examination.					
Learning outcomes: Application of analytical methods in forensic medicine.					
Brief outline of the course: 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. Fingerprints. Forensic biology. Forensic toxicology.					
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:					
Course assessment Total number of assessed students: 42					
A	B	C	D	E	FX
52.38	33.33	14.29	0.0	0.0	0.0
Provides: doc. RNDr. Katarína Reiffová, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/SP1/14	Course name: Semestral Project I
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present	
Number of credits: 4	
Recommended semester/trimester of the course: 1.	
Course level: II.	
Prerequisites:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 107	
abs	n
99.07	0.93
Provides: RNDr. Rastislav Serbin, PhD., doc. RNDr. Mária Kožurková, CSc., prof. Dr. Yaroslav Bazel', DrSc., prof. RNDr. Jozef Gonda, DrSc., doc. RNDr. Ján Imrich, CSc., doc. RNDr. Miroslava Martinková, PhD., doc. RNDr. Erik Sedlák, PhD., RNDr. Nataša Tomášková, PhD., doc. RNDr. Viktor Víglaský, PhD., RNDr. Rastislav Varhač, PhD., RNDr. Danica Sabolová, PhD., RNDr. Jana Šandrejová, PhD.	
Date of last modification: 27.02.2017	
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ SPII/14	Course name: Semestral Project II
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present	
Number of credits: 6	
Recommended semester/trimester of the course: 3.	
Course level: II.	
Prerequisites:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 36	
abs	n
100.0	0.0
Provides: prof. Dr. Yaroslav Bazel', DrSc., doc. RNDr. Tat'ána Gondová, CSc., doc. RNDr. Katarína Reiffová, PhD., doc. Ing. Viera Vojteková, PhD., prof. Mgr. Vasil' Andruch, DrSc., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Rastislav Serbin, PhD., RNDr. Jana Šandrejová, PhD.	
Date of last modification: 24.02.2017	
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ SPIII/15	Course name: Semestrálny projekt III
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present	
Number of credits: 6	
Recommended semester/trimester of the course: 4.	
Course level: II.	
Prerequisites:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 23	
abs	n
100.0	0.0
Provides: prof. Mgr. Vasil' Andruch, DrSc., prof. Dr. Yaroslav Bazel', DrSc., doc. Ing. Viera Vojteková, PhD., doc. RNDr. Tat'ána Gondová, CSc., doc. RNDr. Katarína Reiffová, PhD., RNDr. Jana Šandrejová, PhD.	
Date of last modification: 27.02.2017	
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice		
Faculty: Faculty of Science		
Course ID: KPPaPZ/SPVKE/07	Course name: Social-Psychological Training of Coping with Critical Life Situations	
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 credits: 2		
Recommended semester/trimester of the course: 2.		
Course level: II.		
Prerequisites:		
Conditions for course completion:		
Learning outcomes:		
Brief outline of the course:		
Recommended literature:		
Course language:		
Course assessment Total number of assessed students: 126		
abs	n	z
97.62	2.38	0.0
Provides: Mgr. Ondrej Kalina, PhD.		
Date of last modification: 16.02.2017		
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.		

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ SVK1/00		Course name: Students Scientific Conference (Presentation)			
Course type, scope and the method: Course type: Recommended course-load (hours): Per week: Per study period: Course method: present					
Number of credits: 4					
Recommended semester/trimester of the course: 2., 4.					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 204					
A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0
Provides:					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: ÚTVŠ/ TVa/11		Course name: Sports Activities I.					
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present							
Number of credits: 2							
Recommended semester/trimester of the course: 1.							
Course level: I., I.II., II.							
Prerequisites:							
Conditions for course completion:							
Learning outcomes:							
Brief outline of the course:							
Recommended literature:							
Course language:							
Course assessment Total number of assessed students: 10457							
abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
88.25	0.0	0.0	0.0	0.0	0.02	7.81	3.92
Provides: Mgr. Peter Bakalár, PhD., Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, Mgr. Zuzana Küchelová, PhD., PaedDr. Jana Potočnicková, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Aurel Zelko, PhD., Mgr. Marcel Čurgali, doc. PhDr. Ivan Šulc, CSc.							
Date of last modification: 23.02.2017							
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.							

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: ÚTVŠ/ TVb/11		Course name: Sports Activities II.					
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present							
Number of credits: 2							
Recommended semester/trimester of the course: 2.							
Course level: I., I.II., II.							
Prerequisites:							
Conditions for course completion:							
Learning outcomes:							
Brief outline of the course:							
Recommended literature:							
Course language:							
Course assessment Total number of assessed students: 9779							
abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
85.09	0.61	0.02	0.0	0.0	0.02	10.36	3.9
Provides: Mgr. Peter Bakalár, PhD., Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, Mgr. Zuzana Küchelová, PhD., PaedDr. Jana Potočnicková, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Aurel Zelko, PhD., Mgr. Marcel Čurgali, doc. PhDr. Ivan Šulc, CSc.							
Date of last modification: 23.02.2017							
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.							

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: ÚTVŠ/ TVc/11		Course name: Sports Activities III.					
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present							
Number of credits: 2							
Recommended semester/trimester of the course: 3.							
Course level: I., I.II., II.							
Prerequisites:							
Conditions for course completion:							
Learning outcomes:							
Brief outline of the course:							
Recommended literature:							
Course language:							
Course assessment Total number of assessed students: 6188							
abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
89.66	0.03	0.0	0.0	0.0	0.0	4.36	5.95
Provides: PaedDr. Jana Potočnicková, PhD., Mgr. Marcel Čurgali, Mgr. Peter Bakalár, PhD., Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Aurel Zelko, PhD., doc. PhDr. Ivan Šulc, CSc.							
Date of last modification: 23.02.2017							
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.							

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice							
Faculty: Faculty of Science							
Course ID: ÚTVŠ/ TVd/11		Course name: Sports Activities IV.					
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: 2 Per study period: 28 Course method: present							
Number of credits: 2							
Recommended semester/trimester of the course: 4.							
Course level: I., I.II., II.							
Prerequisites:							
Conditions for course completion:							
Learning outcomes:							
Brief outline of the course:							
Recommended literature:							
Course language:							
Course assessment Total number of assessed students: 4644							
abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
85.66	0.32	0.04	0.0	0.0	0.0	6.61	7.36
Provides: Mgr. Marcel Čurgali, Mgr. Peter Bakalár, PhD., Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, Mgr. Zuzana Küchelová, PhD., PaedDr. Jana Potočnicková, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Aurel Zelko, PhD., doc. PhDr. Ivan Šulc, CSc.							
Date of last modification: 23.02.2017							
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.							

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: KPPaPZ/UPR/03		Course name: The Art of Aiding by Verbal Exchange			
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 credits: 2					
Recommended semester/trimester of the course: 4.					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course:					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 49					
A	B	C	D	E	FX
85.71	4.08	2.04	2.04	2.04	4.08
Provides: Mgr. Ondrej Kalina, PhD.					
Date of last modification: 16.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ VSE1a/04		Course name: 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 credits: 2					
Recommended semester/trimester of the course: 1.					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course: Actual problems of physical and analytical chemistry which are connected with the solution of the students theses.					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 44					
A	B	C	D	E	FX
88.64	4.55	2.27	2.27	2.27	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, DrSc., doc. RNDr. Andrea Straková Fedorková, PhD., prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Andrea Morovská Turoňová, PhD., RNDr. Rastislav Serbin, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice					
Faculty: Faculty of Science					
Course ID: ÚCHV/ VSE1b/04		Course name: 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 credits: 2					
Recommended semester/trimester of the course: 2.					
Course level: II.					
Prerequisites:					
Conditions for course completion:					
Learning outcomes:					
Brief outline of the course: Actual problems of physical and analytical chemistry which are connected with the solution of the students theses.					
Recommended literature:					
Course language:					
Course assessment Total number of assessed students: 43					
A	B	C	D	E	FX
90.7	2.33	4.65	2.33	0.0	0.0
Provides: 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, DrSc., RNDr. Andrea Morovská Turoňová, PhD., RNDr. Rastislav Serbin, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ ÚTVŠ/CM/13	Course name: Seaside Aerobic Exercise
Course type, scope and the method: Course type: Practice Recommended course-load (hours): Per week: Per study period: 36s Course method: present	
Number of credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisites:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 15	
abs	n
26.67	73.33
Provides: Mgr. Alena Buková, PhD., Mgr. Agata Horbacz, PhD.	
Date of last modification: 23.02.2017	
Approved: Guaranteeprof. Dr. Yaroslav Bazel', DrSc.	