CONTENT

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: CJP/ PFAJAKA/07	**Course name:** Academic English

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II., N

Prerequisities:

Conditions for course completion:
Combined method of teaching (classroom/distance)
Active classroom participation, assignments handed in on time, 2 absences tolerated
1 test (10th week), no retake. (in classroom, in case of distance learning due to worsened epidemiological situation – online)
Presentation on chosen topic (in case of distance learning - online thorugh MS Teams)
Final evaluation- average assessment of test (40%), essay (30%) and presentation (30%).
Grading scale: A 93-100%, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64% and less

Learning outcomes:

Brief outline of the course:

Recommended literature:
Seal B.: Academic Encounters, CUP, 2002
T. Armer :Cambridge English for Scientists, CUP 2011
M. McCarthy M., O´Dell F. - Academic Vocabulary in Use, CUP 2008
Zemach, D.E, Rumisek, L.A: Academic Writing, Macmillan 2005
Olsen, A. : Active Vocabulary, Pearson, 2013
www.bbclearningenglish.com
Cambridge Academic Content Dictionary, CUP, 2009

Course language:
English language, level B2 according to CEFR.

Notes:

Course assessment
Total number of assessed students: 379

A	B	C	D	E	FX
33.77	22.16	15.3	10.03	6.6	12.14

Provides: Mgr. Viktória Mária Slovenská

Date of last modification: 17.09.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/PPB/03	**Course name:** Advanced Biochemistry Practical

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 ECTS credits: 7

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚCHV/BNK1/15,ÚCHV/BNK2/15

Conditions for course completion:

Learning outcomes:
To allow students the use theoretical knowledge about nucleic acids.

Brief outline of the course:
Advanced practice of biochemistry is closely connected to Practice of biochemistry. The focus of subject on the modern trends of molecular study of nucleic acids, various DNA-ligand and DNA-protein interactions.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 141

A	B	C	D	E	FX
47.52	41.84	7.8	2.13	0.71	0.0

Provides: doc. RNDr. Viktor Víglaský, PhD.

Date of last modification: 23.02.2016

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ PPA1/03	**Course name:** Advanced Practical from Inorganic Chemistry

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 ECTS credits: 6

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚCHV/ACHU/03 and leboÚCHV/ACH2/03

Conditions for course completion:
Evaluation is based on the success of the experimental work, the laboratory logbooks and written tests.

Learning outcomes:
To provide students with the advanced techniques and methods used in the synthesis of inorganic compounds (non-aqueous solvents, inert gas envronment...) and methods of their analysis.

Brief outline of the course:
Advanced syntheses of inorganic and coordination compounds (salen complexes, ferocene, cobaloximes, inorganic polymers...), their identification and characterisation using spectroscopic methods, methods of thermal analysis and X-ray powder diffraction.

Recommended literature:
1. G. Marr, B.W. Rockett: Practical Inorganic Chemistry, van Nostrand Reinhold Comp., London 1972.
2. Inorganic Syntheses, Mc Graw-Hill Book Comp., New York.
3. V. Zelenak: Internal study texts.

Course language:

Notes:

Course assessment
Total number of assessed students: 71

A	B	C	D	E	FX
94.37	5.63	0.0	0.0	0.0	0.0

Provides: RNDr. Miroslav Almáši, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/PPOC/03	**Course name:** Advanced organic chemistry - Lab

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 ECTS credits: 6

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚCHV/OCH1a/09 and leboÚCHV/OCH1a/10

Conditions for course completion:
Two tests 2x25 p., ten reports (in English) 10x2 p., laboratory skills 10 p., short quizzes and questions 20p. A 100 p. in total. Assessment A: 91-100p, B: 81-90p, C: 71-80p, D: 61-70p, E: 51-60p, Fx: 0-50p.
Based on continuous evaluation.

Learning outcomes:
Advanced organic chemistry - laboratory practices is a preparation for the individual experimental work in a synthetic laboratory.

Brief outline of the course:
Advanced organic chemistry - laboratory practices is focused on mastering the advanced laboratory technique and methodology in synthesis of organic compounds (work in a small scale, chromatography, use of a equipment such as a magnetic stirring plates, vacuum rotary evaporator).

Recommended literature:
Harwood, L. M., Moody, CH. J. Experimental Organic Chemistry, Blackwell Scientific Publications, Oxford London 1990.

Course language:
Slovak and English

Notes:

Course assessment
Total number of assessed students: 123

A	B	C	D	E	FX
61.79	30.08	4.88	2.44	0.0	0.81

Provides: RNDr. Martin Walko, PhD., RNDr. Zuzana Kudličková, PhD., RNDr. Mariana Budovská, PhD., RNDr. Ján Elečko, PhD.

Date of last modification: 24.01.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ANCH1a/10	**Course name:** Analytical 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 ECTS credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:
Examination

Learning outcomes:
Getting a knowledge of the theoretical principles and basics of analytical chemistry.

Brief outline of the course:
Brief subject plan: The subject of analytical chemistry, basic concept and terminology. Present problems of analytical chemistry. Classification of analytical methods. Analytical signal, its evaluation, evaluation of analytical data. Analytical chemistry of complicated, multicomponent consisting systems. Basic tools of analytical chemistry. Analytical experiment, classification of analytical concepts, choice of a suitable analytical method. Qualitative analysis, separation by selective coagulation with group reagent. Organic analysis, derivatisation. Protocol of analytical measurements. Equilibria in analytical chemsitry, equilibrium constants, types of reactions used in analytical chemistry. Dissociation, buffer systems, pH, calculation. Solubility, calculation of solubility constant. Effect of various factors on solubility. Potential, calculation of potential. The use of competitive reactions suitable for potential regulation. Complex forming reactions, constants, calculation. Methods of quantitative analysis. Volumetric analysis, principles and basic concepts. Calculations in volumetric analysis and gravimetry. Acidimetry and alcalimetry. Standardisation of volumetric reagent. Manganometry and iodometry. Back titration. Complex forming volumetric analysis. Coagulative volumetric analysis. Titration curves, indication of point of equivalence. Gravimetry, basic principles, gravimetric factor.

Recommended literature:
1.D.Harvey: Modern Analytical Chemistry. McGraw Hill, Boston, 2000.
2.Z.Holzbecher, j.Churáček a kol.: Analytická chemie, SNTL,Alfa, Praha 1987.
3.J.Majer a kol. : Analytická chémia pre farmaceutické fakulty, Osveta, 1989.
4.Garaj J., Hladký Z., Labuda J.: Analytická chémia I. Vydavateľstvo STU. Bratislava 1996.
5.Christian G.D. Analytical Chemistry. John Wiley & Sons, Inc. New York – Chichester – Brisbane – Toronto – Singapore 1994.
6.Holtzclaw H.F., Jr., Robinson W.R. College Chemistry with Qualitation Analysis. D.C. Heath and Company 1988.

Course language:

Notes:

Course assessment
Total number of assessed students: 316

A	B	C	D	E	FX
6.01	12.03	25.32	32.59	21.84	2.22

Provides: prof. Dr. Yaroslav Bazeľ, DrSc., doc. RNDr. Katarína Reiffová, PhD., doc. Ing. Viera Vojteková, PhD., RNDr. Rastislav Serbin, PhD., RNDr. Jana Šandrejová, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/BPO/14	**Course name:** Bachelor Thesis and its Defence

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

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Oral presentation of the thesis results. Answering questions of the thesis oponent or members of the state examination board.

Recommended literature:

Course language:
slovak

Notes:

Course assessment
Total number of assessed students: 183

A	B	C	D	E	FX
86.89	8.74	2.19	2.19	0.0	0.0

Provides:

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/FMZ/04	**Course name:** Basic Principles of Medicinal Chemistry

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

Number of ECTS credits: 3

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:
Two tests

Learning outcomes:
Explanation of fundamental conceptions of medicinal chemistry, understanding of structure-activity relationships including space structure and chirality and their consequences on chemical and physico-chemical properties influencing biological activity. Gaining knowledge of the present state in the field of selected important groups of drugs, such as antibacterial, antiviral or antitumor drugs.

Brief outline of the course:
Introduction, classification of drugs, factors influencing design and activity of drugs of the third generation, drug chirality, search for new drugs, structure-activity relationships, antibacterial compounds, antitumor compounds, antiviral compounds.

Recommended literature:
1. Medicinal Chemistry: Principles and Practice, King F. D., Ed., The Royal Society of Chemistry, Thomas Graham House, Cambridge, 1994.
2. Advances in Drug Discovery Techniques: Harvey A. L., Ed., Wiley & Sons, Chichester, 1998.
3. Thomas G.: Medicinal Chemistry: An introduction. John Willey & Sons, 2000.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 197

A	B	C	D	E	FX
38.07	22.34	19.29	11.17	8.12	1.02

Provides: RNDr. Mariana Budovská, PhD.

Date of last modification: 25.03.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ SMP/10	**Course name:** Basic statistics for sciences

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 2 **Per study period:** 14 / 28
Course method: present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 3., 5.

Course level: I.

Prerequisities:

Conditions for course completion:
Given on the basis of partial examination and written exam.

Learning outcomes:
Understanding basics of descriptive statistics used in sciences.

Brief outline of the course:
• Data types. Frequencies.
• Measures of location and variability. Quantiles.
• Basic probability distributions.
• Point and interval estimators.
• Testing of basic statistical hypotheses. Power of tests.
• Measuring the strength of a dependence.

Recommended literature:
• Wonnacott, Wonnacott: Introductory Statistics, Wiley 1977
• Statsoft's Electronic Statistics Textbook, 2014

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 144

A	B	C	D	E	FX
7.64	9.72	13.19	19.44	35.42	14.58

Provides: prof. RNDr. Ivan Žežula, CSc.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/MIN1/14	**Course name:** Basis of Mineralogy

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 4., 6.

Course level: I.

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

Conditions for course completion:
Verification of theoretical knowledge and recognizing minerals.
Semester project, practical test from recognizing of minerals, optional oral examination.

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

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

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

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 85

A	B	C	D	E	FX
88.24	8.24	1.18	1.18	0.0	1.18

Provides: doc. RNDr. Ivan Potočňák, PhD.

Date of last modification: 27.03.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BCH1a/03	**Course name:** Biochemistry I

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

Number of ECTS credits: 3

Recommended semester/trimester of the course: 3.

Course level: I., II.

Prerequisities:

Conditions for course completion:
test
Test and oral examination.

Learning outcomes:
The aim of Biochemistry I teaching is to acquire knowledge in the field of living organisms on the basis of the molecular structure and properties of biolomolecules.

Brief outline of the course:
Basic information on structure and properties of biomolecules(aminoacids, nucleotides,lipids, sugars, proteins, polynucleotides, polysaccharides, membranes, signal molecules).

Recommended literature:
Voet D., Voetová J. G., Biochemie, Victoria Publishing, Praha, 1994
Škárka B., Ferenčík M., Biochémia, Alfa, Bratislava, 2001
Musil J., Nováková O., Biochemie v obrazech a schématech, Avicenum, Praha, 1990
Berg J. M., Tymoczko J. L., Stryer L., Biochemistry, W. H. Freeman and Company, NY, 2007

Course language:

Notes:

Course assessment
Total number of assessed students: 636

A	B	C	D	E	FX
12.89	22.33	32.55	14.78	16.67	0.79

Provides: prof. Ing. Marián Antalík, DrSc.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BCH1b/10	**Course name:** Biochemistry II

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚCHV/BCH1a/03

Conditions for course completion:
test
Test and oral examination.

Learning outcomes:
The aim of biochemistry teaching is to acquire knowledge in the field of living organisms on the basis of their molecular structure information on cell metabolism.

Brief outline of the course:
Basic principle of metabolism, basic metabolic pathways and cycles, integration of cell metabolism.

Recommended literature:
Voet D., Voetová J. G.: Biochemie, Victoria Publishing, Praha, 1994
Škárka B., Ferenčík M.: Biochémia, Alfa, Bratislava, 2001
Berg J. M., Tymoczko J. L., Stryer L.: Biochemistry, W. H. Freeman and Company, New York, 2007
Musil J., Nováková O.: Biochemie v obrazech a schématech, Avicenum, Praha, 1990

Course language:

Notes:

Course assessment
Total number of assessed students: 326

A	B	C	D	E	FX
8.9	20.55	30.37	18.1	21.47	0.61

Provides: prof. Ing. Marián Antalík, DrSc., RNDr. Rastislav Varhač, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/PBC1/00	**Course name:** Biochemistry Practical

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 ECTS credits: 6

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚCHV/BCH1a/03

Conditions for course completion:
2 written tests
Protocols + 75 % continuous evaluation.

Learning outcomes:
To allow students to get practical experience in experimental techniques and methods, currently used in a biochemical research: UV/VIS spectrophotometry, thin layer chromatography (TLC), gel electrophoresis, isolation of macromolecules and substances from biological materials and their quantitative and qualitative determination.

Brief outline of the course:
The most important biochemical laboratory methods. The qualitative tests for amino acids and proteins. Time-dependent course of enzyme-catalyzed reaction: determination of enzymatic activity, determination of the first order rate constant, calculations of math models (examples), effect of a substrate concentration on initial rate of reaction, determination of Km and Vmax for urease. Isolation and detection of nucleic acids.

Recommended literature:
Sedlák, Danko, Varhač, Paulíková, Podhradský: Practical exercises from biochemistry, 2007, http://kosice.upjs.sk/~kbch/document.php?name=pbc&lang=sk

Course language:

Notes:

Course assessment
Total number of assessed students: 418

A	B	C	D	E	FX
57.66	25.6	10.29	5.02	0.96	0.48

Provides: doc. RNDr. Mária Kožurková, CSc., RNDr. Nataša Tomášková, PhD., RNDr. Rastislav Varhač, PhD., RNDr. Danica Sabolová, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/BNK2/15	**Course name:** Biochemistry of Nucleic Acids II

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

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚCHV/BNK1/15

Conditions for course completion:
test
Oral examination

Learning outcomes:
To provide students with more advanced knowledge of DNA and its uses based on material provided in Molecular Biology I.

Brief outline of the course:
Basic principles of isolation and purification of nucleic acids and their characterization,
Gene engineering and enzymatic tools,
Preparation of recombinant DNA,
DNA amplification methods; PCR, RT PCR, SELEX, etc.,
Analyses of nucleic acids, DNA sequencing,
Applying of genetic manipulations.

Recommended literature:
J. Turňa a kol.: Rekombinantná DNA a biotechnológie
J. Sambrook a kol.: Molecular cloning - a laboratory manual

Course language:

Notes:

Course assessment
Total number of assessed students: 127

A	B	C	D	E	FX
24.41	26.77	22.83	22.05	3.94	0.0

Provides: doc. RNDr. Viktor Víglaský, PhD.

Date of last modification: 17.02.2016

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BNK1/15	**Course name:** Biochemistry of Nucleic Acids I

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

Number of ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
2x test
Examination

Learning outcomes:
To provide students with knowledge of the structure and function of RNA and DNA and of genomes.

Brief outline of the course:
The structure and biological function of proteins, RNA and DNA structure, the structure of prokaryotic and eukaryotic chromosomes. Genetic information, genetic code, gene and transcription unit of prokaryotes and eukaryotes, exones and introns, codon and anticodon. DNA in the nucleus and extrachomosomal DNA. Replication of bacterial genome, chromosomal and plasmid DNA, replication of eukaryotic genome. Trancription of bacteria genome, structural genes, rRNA and tRNA, transcription of eukaryotic genome. RNA polymerase II, I and III. Post-transcription modification of eukaryotic RNA, hnRNA, pre-mRNA, pre-tRNA. Translation of nucleic acids, post-translation modification of proteins. Regulation of gene expression in eukaryotes and prokaryotes on the transcription and translation levels. Life cycle of cells and its regulation, ontogenic development. DNA recombination, sexual transmission of genetic material. Heredity, inheritance disease, gene therapy. DNA transposition, essential of mutagenesis. DNA repair.

Recommended literature:
S. Rosypal: Úvod do molekulárnej biológie (I, II, III diel)

Course language:

Notes:

Course assessment
Total number of assessed students: 243

A	B	C	D	E	FX
11.52	16.05	28.81	27.57	13.99	2.06

Provides: doc. RNDr. Viktor Víglaský, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BAC1/04	**Course name:** Bioinorganic Chemistry I

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Test or seminar works
examination

Learning outcomes:
The basic knowledges about biometal interactions with biomolecules, biomaterials, biominerals, biocatalysis, metals in biology and medicine, metal-based drugs, toxic metals for biosystems and metals in the environment.

Brief outline of the course:
Metalic and non-metalic elements and their roles in biological systems (biometals, bulk biological elements, essential trace elements). Biocoordination compounds, bioligands. Biocatalyzers. Oxygen carriers and oxygen transport proteins. Photochemical process. Catalysis and regulation processes. Calcium biominerals and biomineralization.Toxic metals. Application of knowledge of bioinorganic chemistry in pharmacy, chemotherapy (e.g. platinum complexes in cancer therapy) radiodiagnostics, mineral biotechnology, ecology and in other branches of life.

Recommended literature:
1. Shriver D. F., Atkins P. W., Overton T. L., Rourke J.P., Weller M.T., Amstrong F.A.: Shiver & Atkins. Inorganic Chemistry. Oxford University Press, Oxford 2006.
2. Kaim W., Schwederski B.: Bioinorganic Chemistry: Inorganic Elements in the Chemistry of Life. Wiley, Chichester 1998.
3. Wilkins P. C., Wilkins R. G.: Inorganic Chemistry in Biology. OCP, Oxford 1997.

Course language:

Notes:

Course assessment
Total number of assessed students: 304

A	B	C	D	E	FX
41.12	28.29	18.75	5.92	5.59	0.33

Provides: doc. RNDr. Zuzana Vargová, Ph.D.

Date of last modification: 03.05.2015
Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BTC/04	**Course name:** Biotechnology

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

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:
test

Learning outcomes:
Students obtained the knowledge of basic biotechnological processes and their applications in agriculture, industry, food production and medicine.

Brief outline of the course:
Characterization of biotechnology, its methods and areas of application in industry, food production, pharmaceutical and environmental industries. Biotechnological production of alcohols, solvents, acids, carbohydrates, enzymes, vitamins and antibiotics.

Recommended literature:
Z. Vodrážka: Biotechnologie, Academia Praha, 1992.
B. Sykita: Biotechnologie pro farmaceuty, FaF UK Praha, 1984.
E.M.T. El-Mansi et al, Fermentation microbiology and biotechnology,second edition, 2007.
Y.H. Hui, Food biochemistry & food processing, Blackwell Publishing 2006.
J.E. Smith, Biotechnology, Cambridge university press 2009.

Course language:

Notes:

Course assessment
Total number of assessed students: 145

A	B	C	D	E	FX
33.79	28.28	22.76	11.03	3.45	0.69

Provides: RNDr. Danica Sabolová, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ZCVU/04	**Course name:** Chemical Engineering

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I., II., III.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
General and Inorganic Engineering; Mineral raw materials; Raw materials processing, transport and holding; Chemical reactors; Chemical metallurgy – Fe, Al, Cu working; Inorganic acids manufacture (H2SO4, HNO3, HCl, HF, H3PO4); Industrial electrochemistry; Industrial fertilizers; Silicate industry – cement manufacture, ceramics; Petrochemistry

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 15

A	B	C	D	E	FX	N	P
13.33	60.0	20.0	6.67	0.0	0.0	0.0	0.0

Provides: doc. RNDr. Zuzana Vargová, Ph.D.

Date of last modification: 23.02.2018

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/CHV1/99	**Course name:** Chemical calculations

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
Short written tests.
Written test.

Learning outcomes:
To teach students how to calculate material balances in the systems with or without chemical processes and how to calculate examples concerning the chemical equilibrium.

Brief outline of the course:
Expression of the clear matter amount and the system composition. Stoichiometric formula. Material bilances for preparation, dissolving and mixing of solutions, and for separating of mixtures. Material bilances for combined processes. Chemical equations and material bilances in the systems with chemical processes. Acid-Base equilibrium and the pH calculations. The solubility product and solubility.

Recommended literature:
Potočňák I.: Chemické výpočty vo všeobecnej a anorganickej chémii (skriptum), PF UPJŠ, Košice, 2006.

Course language:

Notes:

Course assessment
Total number of assessed students: 1437

A	B	C	D	E	FX
22.55	19.42	24.15	20.18	12.94	0.77

Provides: RNDr. Martin Vavra, PhD., RNDr. Miroslav Almáši, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ISCH1b/03	**Course name:** Cheminformatics II

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 1 / 2 **Per study period:** 14 / 28
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚCHV/ISC1a/03 and leboÚCHV/ISC1a/00 and leboÚCHV/ISVTC/14

Conditions for course completion:
seminár project

Learning outcomes:
The main goal is to introduce students to subject of cheminformatics, mainly the chemical structures representation, storing in databases, searching and retrieving. Basics of current approachs of delivering chemical information on Internet. Using the structural and factual databases (Web of Science, Cambridge structural database...). Lectures are completed with practical training in computer laboratory.

Brief outline of the course:
Representing and visualizing 2D chemical structures.
Representing and visualizing 3D chemical structures.
Chemistry databases - basics.
Chemistry databases - substructure searching.
Chemistry databases - similarity searching.
Chemical information and web applications.
Factual databases - Beistein CrossFire, PubChem, ...
Structural databases - CSD, PDB, ...

Recommended literature:
1. Gasteiger J.(Editor), Engel T.(Editor): Chemoinformatics : A Textbook. John Wiley & Sons, 2004, ISBN 3-527-30681-1
2. Internet resources

Course language:
slovak language and english language

Notes:

Course assessment
Total number of assessed students: 87

A	B	C	D	E	FX
98.85	0.0	0.0	0.0	1.15	0.0

Provides: doc. RNDr. Ivan Potočňák, PhD., RNDr. Ladislav Janovec, PhD.

Date of last modification: 05.02.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ PRCH1/10	**Course name:** Chemistry seminar I
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 0 / 1 **Per study period:** 0 / 14 **Course method:** present	
Number of ECTS credits: 1	
Recommended semester/trimester of the course: 1.	
Course level: I.	
Prerequisities:	
Conditions for course completion: 2 written tests from the anorganic compounds nomenclature and 1 written test from the organic compounds nomenclature, min. 51% from each test is required. Final evaluation will be calculated from all three written tests, 100% attendance at seminars.	
Learning outcomes: The students will become familiar with the basics of IUPAC nomenclature of inorganic and organic compounds.	
Brief outline of the course: 1. Nomenclature of binary and pseudobinary compounds, acids, salts, double salts and coordination compounds. 2. Noenclature of alkanes, alkenes, alkynes, cyclic and aromatic hydrocarbons 3. Nomenclature of the basic heterocyclic compounds. 4. Nomenclature of halogen derivatives of hydrocarbons. 5. Nomenclature of hydroxy compounds and their derivatives. 6. Nomenclature of carbonyl compounds and their derivatives. 7. Nomenclature of carboxylic acids and their derivatives.	
Recommended literature: M. Zikmund: Ako tvoriť názvy v anorganickej chémii, SPN 1995. A. Sirota, E. Adamkovič, Názvoslovie anorganických látok, SPN, Bratislava, 2003. Heger, J., Hnát, I., Putala, M.: Názvoslovie organických zlúčenín, SPN, Bratislava, 2004. Putala, M., Sališová, M., Vencel, T.: Názvoslovie organických zlúčenín, Bratislava, 2015.	
Course language: slovak language	
Notes:	

Course assessment
Total number of assessed students: 562

A	B	C	D	E	FX
19.4	32.56	24.91	10.85	2.67	9.61

Provides: RNDr. Kvetoslava Stanková, PhD., doc. RNDr. Zuzana Vargová, Ph.D., RNDr. Jana Špaková Raschmanová, PhD.

Date of last modification: 05.02.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ PRCH2/10	**Course name:** Chemistry seminar II

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 0 / 1 **Per study period:** 0 / 14
Course method: present

Number of ECTS credits: 1

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚCHV/PRCH1/10ÚCHV/CHV1/99,

Conditions for course completion:
No one.
Oral verification of knowledge.

Learning outcomes:
Theoretical training of studenst for practical course „Practical from Inorganic Chemistry“

Brief outline of the course:
Priciples and calculations to practical course: Elements, oxides and nitrides, acids, salts and complexes – their laboratory preparation.

Recommended literature:
Z. Vargová, J. Kuchár, Základné praktikum z anorganickej chémie, UPJŠ Košice, 2009
D. Valigura, T. Gracza, A. Mašlejová, B. Papánková, J. Šíma, K. Špirková, Chemické tabuľky, STU, Bratislava, 2004

Course language:

Notes:

Course assessment
Total number of assessed students: 351

A	B	C	D	E	FX
73.5	23.08	2.56	0.85	0.0	0.0

Provides: RNDr. Martin Vavra, PhD., doc. RNDr. Zuzana Vargová, Ph.D., doc. RNDr. Juraj Kuchár, PhD., RNDr. Miroslav Almáši, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ BSS/14	**Course name:** Chémia

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

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: I.

Prerequisities: ÚCHV/ACH2/03,ÚCHV/ANCH1b/03,ÚCHV/BCH1b/03 and leboÚCHV/ BCH1b/10,ÚCHV/FCH1b/03 and leboÚCHV/FCH1b/10,ÚCHV/OCH1b/03

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Analytical chemistry.
Analytical chemistry, basic concepts. Qualitative and quantitative analysis. Group, selective and specific reactions. Principle and utilising of gravimetry. Volumetric analysis. Instrumental analytical methods. Classification, basic concepts and terminology. UV/VIS spectrophotometry. Luminiscent analysis. Infrared and Raman spectroscopy. Atomic absorption and atomic emission spectroscopy. Mass spectroscopy. Potentiometry. Electrogravimetric metods. Conductometry. Coulometry. Voltamperometry. Polarography. Separation and preconcentration methods.
Inorganic chemistry.
Subject of inorganic chemistry. Systematic nomenclature of inorganic compounds. Reactions of inorganic compounds. Overview of the properties of nonmetallic elements and their compounds: evolution of the properties according to groups and periods. Metals and alloys. Overview of general properties of metals, semimetals and their compounds. General properties of the transition elements and their compounds with emphasis on the elements of the first transtion series. Lanthanides and actinides. Metals and semimetals of the p-block, their properties.
Biochemistry.
Proteins - primary, secondary, tertiary and quarterly structures of proteins. Enzymes - structure and enzymatic catalysis. Enzymatic activity - influence of pH and temperature on enzymatic activity. Regulation of enzymatic activity. Nucleic acids - structure and function. Mechanism of replication, transcription and translation of DNA. Methods of genetic engineering. Metabolic processes. Glycolyse. Gluconeogenesis. Citrate cycle. Oxidative phosphorylation. Respiratory chain. Photosynthesis. Metabolism of fat acids. Metabolism of aminoacids. Urea cycle.
Physical chemistry.
Principles of chemical kinetics, reaction rate, reaction order and molecularity, reaction constant. Kinetic classification of reactions. Thermodynamic and kinetic control of reactions. Catalysis. Chemical thermodynamics. Reaction heat. Entropy. Thermochemical laws. Activation Gibbs

energy. Chemical equilibrium, equilibrium constant, affinity and standard affinity, influence of temperature, pressure and composition on chemical equilibrium. Phase equilibrium.
Organic chemistry.
Organic chemistry - basic concept, configuration and conformation of alkanes and cycloalkanes, stereochemistry of organic compounds, enantiomers and diastereoisomers, bonds in organic componds, reactions of alkenes, alcohols, amines, alkyl halides and aromatic compounds. Electrophiles and nucleophiles.

Recommended literature:

Course language:
slovak

Notes:

Course assessment
Total number of assessed students: 134

A	B	C	D	E	FX
39.55	27.61	17.16	10.45	2.99	2.24

Provides:

Date of last modification: 08.10.2019

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: CJP/ PFAJKKA/07	**Course name:** Communicative Competence in English

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II., N

Prerequisities:

Conditions for course completion:
Active participation in class and completed homework assignments. Students are allowed to miss two classes at the most.
Online teaching (MS Teams), in case of an improved epidemiological situation = on-site teaching.
2 credit tests (presumably in weeks 6/7 and 12/13) and a short oral presentation in English.
The tests will be taken online (MS Teams) during online teaching and in class in case of on-site classes.
The presentation will be sent to the course instructor as a video recording.
Final evaluation consists of the scores obtained for the 2 tests (70%) and the presentation (30%).
Final grade will be calculated as follows: A 93-100 %, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64 % and less.

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

Brief outline of the course:
Rodina, jej formy a problémy
Vyjadrovanie pocitov a dojmov
Dom, bývanie a budúcnosť
Formy a dialekty v anglickom jazyku
Život v meste a na vidieku
Kolokácie a idiomy, zaužívané slovné spojenia
Prázdniny a sviatky vo svete

Životné prostredie a ekológia
Výnimky zo slovosledu
Frázové slovesá a ich použitie
Charakteristiky neformálneho diškurzu

Recommended literature:

www.bbclearningenglish.com
McCarthy M., O'Dell F.: English Vocabulary in Use, Upper-Intermediate. CUP, 1994.
Misztal M.: Thematic Vocabulary. SPN, 1998.
Fictumova J., Ceccarelli J., Long T.: Angličtina, konverzace pro pokročilé. Barrister and Principal, 2008.
Peters S., Gráf T.: Time to practise. Polyglot, 2007.
Jones L.: Communicative Grammar Practice. CUP, 1985.
Alexander L.G.: Longman English Grammar. Longman, 1988.

Course language:
English language, B2 level according to CEFR

Notes:

Course assessment
Total number of assessed students: 241

A	B	C	D	E	FX
38.59	22.41	19.5	9.54	6.64	3.32

Provides: Mgr. Barbara Mitríková

Date of last modification: 11.02.2021

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: CJP/ PFAJGA/07	**Course name:** Communicative Grammar in English

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II., N

Prerequisities:

Conditions for course completion:
Active classroom participation (max. 2x90 min. absences tolerated). 2 test (5th/6th and 12/13th week), no retake. Final evaluation- average assessment of tests. Grading scale: A 93-100%, B 86-92%, C 79-85%, D 72-78%, E 65-71%, FX 64% and less.

Learning outcomes:

Brief outline of the course:

Recommended literature:
Vince M.: Macmillan Grammar in Context, Macmillan, 2008
McCarthy, O'Dell: English Vocabulary in Use, CUP, 1994
C. Oxengen, C. Latham-Koenig: New English File Advanced, Oxford 2010
Misztal M.: Thematic Vocabulary, Fragment, 1998
www.bbclearningenglish.com
ted.com/talks

Course language:

Notes:

Course assessment
Total number of assessed students: 406

A	B	C	D	E	FX
39.66	18.97	16.75	8.62	5.91	10.1

Provides: Mgr. Lenka Klimčáková

Date of last modification: 14.09.2019

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KGER/NJKG/07	**Course name:** Communicative Grammar in German Language

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 54

A	B	C	D	E	FX
59.26	11.11	9.26	3.7	9.26	7.41

Provides: Mgr. Blanka Jenčíková

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: CJP/ PFAJ4/07	**Course name:** English Language of Natural Science

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:
Distant form of study (Online through MS teams) - based on the sylabus
Active participation in class and completed homework assignments. Students are allowed to miss 2 classes at the most (in case of online form - not attending online class/ assignments not handed in)
Continuous assessment: 2 credit tests taken thorugh MS Teams online(presumably in weeks 6 and 13) and academic presentation in English given through MS Teams online.
In order to be admitted to the final exam, a student has to score at least 65 % as a sum of both credit tests.
The exam test results represent 50% of the final grade for the course, continuous assessment results represent the other 50% of the final grade.
The final grade for the course will be calculated as follows:
A 93-100, B 86-92, C 79-85, D 72-78, E 65-71, FX 64 and less.

Learning outcomes:
Enhancement of students' language skills (speaking, writing, reading and listening comprehension) in English for specific purposes and development of students' language competence (familiarization with selected phonological, lexical and syntactic phenomena), improvement of students' pragmatic competence (familiarization with selected language functions) and improvement of presentation skills at B2 level (CEFR) with focus on terminology of English for natural science.

Brief outline of the course:
1. Introduction to studying language
2. Selected aspects of scientific language
3. Talking about academic study
4. Discussing science
5. Defining scientific terminology and concepts
6. Expressing cause and effect
7. Describing structures
8. Explaining processes
9. Comparing objects, structures and concepts
10. Talking about problem and solution
11. Referencing authors

12. Giving examples
13. Visual aids and numbers
14. Referencing time and place
Presentation topics related to students´study fields.

Recommended literature:

study materials provided by the course instructor
Redman, S.: English Vocabulary in Use, Pre-intermetdiate, Intermediate. Cambridge University Press, 2003.
Armer, T.: Cambridge English for Scientists. CUP, 2011.
Wharton J.: Academic Encounters. The Natural World. CUP, 2009.
Murphy, R.: English Grammar in Use. Cambridge University Press, 1994.
P. Fitzgerald : English for ICT studies. Garnet Publishing, 2011.
https://worldservice/learningenglish, https://spectator.sme.sk
www.isllibrary.com

Course language:

Notes:

Course assessment

Total number of assessed students: 2605

A	B	C	D	E	FX
37.16	25.03	17.04	10.21	8.29	2.26

Provides: Mgr. Lenka Klimčáková, Mgr. Barbara Mitríková, Mgr. Viktória Mária Slovenská, PhDr. Helena Petruňová, CSc.

Date of last modification: 14.02.2021

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ECH1/08	**Course name:** Environmental 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 ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
Examination.

Learning outcomes:

Brief outline of the course:
The subject of environmental chemistry. Matter cycles on Earth. Geochemical cycles. Carbon, nitrogen, sulphur, phospohorous cycles. Metals and environment. Special cycles. Earth atmosphere composition, functions of atmosphere. Physical and chemical processes in atmosphere. Atmospheric photochemistry. Pollutants in atmosphere and greenhouse effect. Models of greenhouse effects. Principles of air quality control. Energetic Earth balance. Water environment and pollutants monitored. Classification of pollutants and ways of elimination. Waste water cleaning processes. Analytical methods in environmental chemistry, applications. Soil analysis, biogeochemical processes. Acid rain, metal ions in soil. Environmental analysis, strategy and concepts.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 59

A	B	C	D	E	FX
64.41	22.03	6.78	3.39	3.39	0.0

Provides: prof. RNDr. Andrej Oriňak, PhD., RNDr. Lenka Lorencová, PhD., doc. RNDr. Andrea Straková Fedorková, PhD.

Date of last modification: 20.09.2017

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/BACHZ/06

Course name: Fundamentals of 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 ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
written test
Oral examination

Learning outcomes:
Principles and theoretical foundations the application of analytical methods in bioanalysis.

Brief outline of the course:
Introduction to Bioanalytical Chemistry. Biological samples classification. Factors that affect analytes in biological samples. Collection, transport and storage of samples, the main principles of sampling, the suppressing of undesirable phenomena. Selected methods of pretreatment of biological samples. Analyzers, equipment and organization of work in a clinical laboratory. Control and management of quality in clinical laboratory. Quality manual, calibration, control, and reference materials. Validation and Good Laboratory Practice. Buffers in bioanalysis. Enzymes in bioanalysis, introduction, distribution, Mechanism of enzyme catalysis. The kinetics of enzymatic reactions with one substrate, the Michaelis constant, constant specificity, lag phase, kinetics of reactions with two substrates. Moderators of enzyme activity. Selected methods for 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.Lee, D.C., Webb, M. Pharmaceutical Analysis, Blackwell, 2003

Course language:

Notes:

Course assessment
Total number of assessed students: 86

A	B	C	D	E	FX
33.72	31.4	30.23	3.49	0.0	1.16

Provides: doc. RNDr. Katarína Reiffová, PhD.

Date of last modification: 03.05.2015
Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/VCH/10	**Course name:** General Chemistry

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 4 / 4 **Per study period:** 56 / 56
Course method: present

Number of ECTS credits: 10

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities: ÚCHV/PRCH1/10

Conditions for course completion:
Three tests are written during the semester. Writing of the tests is mandatory and it is not possible to correct unsuccessfully written tests. Each of the tests is evaluated as follows: 91-100% (A) = 5 points, 81-90% (B) = 4 points, 71-80% (C) = 3 points, 61-70% (D) = 2 points, 51-60% (E) = 1 point, less than 51% (FX) = 0 point. Student must obtain together at least 2 points.
Three tests are written during the semester. Writing of the tests is mandatory and it is not possible to correct unsuccessfully written tests. Each of the tests is evaluated as a percentage. Student must obtain at least 51% of at least one test.
Oral examination.

Learning outcomes:
To provide students with knowledge about atoms, chemical bonds, physical properties of elements and compounds.

Brief outline of the course:
Main terms used in chemistry. Atoms – models of atoms, electron configuration, chemical periodicity and its effect on the properties of elements, radioactivity. Chemical bonds and intermolecular interactions. Chemical structure and physical properties of matter. States of matter. Solutions. Chemical equilibrium. Basis of chemical thermodynamics and chemical kinetics. Classification of chemical reactions. Electrochemistry.

Recommended literature:
Atkins P., Jones L.: Chemical Principles, 2nd ed., Freeman, New York 2002.
Russel J.B.: General Chemistry, 2nd ed., McGraw Hill, London 1992.
Available literature in the library.

Course language:
Slovak and English

Notes:

Course assessment
Total number of assessed students: 807

A	B	C	D	E	FX
10.41	23.54	31.97	17.97	10.41	5.7

Provides: doc. RNDr. Ivan Potočňák, PhD., doc. RNDr. Juraj Kuchár, PhD., RNDr. Miroslav Almáši, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

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 ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities:

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:

Notes:

Course assessment
Total number of assessed students: 158

A	B	C	D	E	FX
25.95	19.62	25.32	15.82	12.66	0.63

Provides: doc. Ing. Viera Vojteková, PhD.

Date of last modification: 01.02.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ ISVTC/14	**Course name:** Information Systems and Computational Technics in Chemistry
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 0 / 4 **Per study period:** 0 / 56 **Course method:** present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 1.	
Course level: I.	
Prerequisities:	
Conditions for course completion: seminar exercises, seminar work + presentation of seminary work	
Learning outcomes: Introductory course aimed at introducing students to the fundamental informatics techniques for chemistry-related disciplines. The class will cover a wide range of topics, including searching chemical information on internet, searching for patent information and work with the primary and secondary literature. Another objective of the course is to teach students basic computer skills.	
Brief outline of the course: Searching, retrieving and use of the informations in chemistry. Using of "paper" resources (primary journals).Searching chemical information on Internet and chemical databases and e-journals. Basic skills in using a text editor, creating spreadsheets and presentations, as well as searching for information using the internet.	
Recommended literature: 1. Maizell R.E.: How to find chemical information, J. Wiley & Sons, 1998 Ash J.E.: Communication storage and retrieval of chemical information, Clichester Ellis Ylorwood 1985 Internet resources for subject. 2. Franců, M: Jak zvládnout testy ECDL. Praha : Computer Press. 2007. 160 s. ISBN 978-80-251-1485-8 3. Jančařík, A. et al.: S počítačem do Evropy – ECDL. 2. vydanie. Praha : Computer Press, 2007. 152 s. ISBN 80-251-1844-3	
Course language: Slovak and English	
Notes:	

Course assessment
Total number of assessed students: 267

A	B	C	D	E	FX
97.0	1.12	0.37	0.37	0.0	1.12

Provides: RNDr. Monika Tvrdoňová, PhD., RNDr. Ladislav Janovec, PhD.

Date of last modification: 05.02.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 7

Recommended semester/trimester of the course: 3.

Course level: I.

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

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

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

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

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

Course language:

Notes:

Course assessment
Total number of assessed students: 645

A	B	C	D	E	FX
12.56	20.62	30.08	24.96	7.29	4.5

Provides: prof. RNDr. Juraj Černák, DrSc., doc. RNDr. Juraj Kuchár, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ACH1/10	**Course name:** Inorganic 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 ECTS credits: 5

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚCHV/VCH/10 and leboÚCHV/VCHU/10 and leboÚCHV/VCHU/15

Conditions for course completion:
Written test, or other distant - electronic form of examination, especially in case of contact teaching forms ban.
It is required to reach 51 % of full points in order to pass the exam.

Learning outcomes:
Aim of the course is to provide the students with a knowledge of systematic chemistry of non-metallic elements.

Brief outline of the course:
Electronic configuration, abundance, use, physical and chemical properties, preparation, reactivity of non-metallic elements hydrogen, halogens, oxygen, sulphur, nitrogen, phosphorus, carbon, silicon, boron and rare gases. Binary and other compounds formed by these elements, their properties and reactivity.

Recommended literature:
1. Greenwood, N. N., Earnshaw, A: Chemistry of the Elements. Pergamon Press, Oxford, 1984
2. Shriver, D.F., Atkins, P.W., Langford, C. H.: Inorganic Chemistry. 4th Ed., Oxford University Press, Oxford, 2006

Course language:

Notes:

Course assessment
Total number of assessed students: 374

A	B	C	D	E	FX
13.1	18.72	27.81	28.61	10.43	1.34

Provides: prof. RNDr. Juraj Černák, DrSc., doc. RNDr. Juraj Kuchár, PhD.

Date of last modification: 31.03.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ ANCH1b/03	**Course name:** Instrumental 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 ECTS credits: 5	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisities:	
Conditions for course completion: Test / Exam	
Learning outcomes: Getting knowledge about the theoretical principles and instrumentation in analytical chemistry.	
Brief outline of the course: Spectroscopic methods of analysis. Electromagnetic radiation. Basic components of spectroscopic instrumentation. Sources of energy. Detectors. Spectroscopy based on absorption. Transmittance and absorbance. Beer's Law. Limitations to Beer's Law. Ultraviolet-visible and infrared spectrophotometry. Atomic absorption spectroscopy. Spectroscopy based on emission. Molecular photoluminescence spectroscopy. Atomic emission spectroscopy. Spectroscopy based on scattering. Mass spectrometry. Electrochemical methods of analysis. Potentiometric methods of analysis. Reference electrodes. Membrane electrodes. Coulometric methods of analysis. Voltammetric methods of analysis. Chromatographic methods. General theory of column chromatography. Optimizing chromatographic separations. Gas chromatography. High-performance liquid chromatography. Ion-exchange chromatography. Supercritical fluid chromatography.	
Recommended literature: 1. Labuda a kol. Analytická chémia. ISBN: 9788022742429, Vydavateľstvo: STU Bratislava, Rok vydania: 2014, Počet strán: 671 2. Christian G.D. Analytical Chemistry. John Wiley & Sons, Inc. New York – Chichester – Brisbane – Toronto – Singapore 1994. 3. Holtzclaw H.F., Jr., Robinson W.R. College Chemistry with Qualitation Analysis. D.C. Heath and Company 1988.	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 569

A	B	C	D	E	FX
20.39	12.65	22.32	18.8	25.48	0.35

Provides: prof. Mgr. Vasiľ Andruch, DSc., RNDr. Rastislav Serbin, PhD., RNDr. Lívia Kocúrová, PhD., RNDr. Jana Šandrejová, PhD.

Date of last modification: 31.01.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ UVF/12	**Course name:** Introduction to General Physics for Chemist
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 1 **Per study period:** 14 **Course method:** present	
Number of ECTS credits: 1	
Recommended semester/trimester of the course: 2.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	
Course assessment Total number of assessed students: 279	

abs	n
94.62	5.38

Provides: Mgr. Tomáš Samuely, PhD., RNDr. Róbert Tarasenko, PhD.
Date of last modification: 29.03.2020
Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ FUMCH1/03	**Course name:** Introduction to Material 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 ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Seminar work.
Examination.

Learning outcomes:
To present the different types of functional materials, their atomic structure and mechanical properties.

Brief outline of the course:
Historical perspectives. Materials and human being. Participation of natural science in material engineering. Material revolutions. Classification of materials. Atomic structure and interatomic bonding. Amorphous and crystalline materials. Mechanics of materials. Imperfections in solids. Crystal lattice defects. Point defects. Line defects. Dislocations. Diffusion. Diffusion mechanisms. Deformations and failures, re-crystallization. Deformations. Plastic deformations. Solid solutions. Intermediary phases. Phases in ceramic systems. Phase transformations. Crystallization of metals. Phase identification methods. Stress and strain. Structure of metallic and ceramic materials. Alloys. Steel. Light metals. Metallic glasses. Gold. Inorganic non-metallic materials. Ceramic construction materials. Ceramic tools. Bio-ceramics. Ceramics in cosmos. High-temperature superconductors. Glass. Building binders. Polymers. Essence of polymers. Thermoplastics. Reactoplastics. Polymer structure. Mechanical properties of polymers. Natural materials. Wood. Bones. Teeth. Conchs and shells. Tectrices.

Recommended literature:
W. D. Callister, Jr.: Fundamentals of Materials Science and Engineering, John Wiley & Sons, 2001.
Brian S. Mitchell: An Introduction to Materials Engineering and Science: For Chemical and Materials Engineers, John Wiley & Sons,
2004.

Course language:

Notes:

Course assessment
Total number of assessed students: 77

A	B	C	D	E	FX
89.61	9.09	0.0	0.0	0.0	1.3

Provides: prof. RNDr. Renáta Oriňaková, DrSc.

Date of last modification: 20.09.2017

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: Dek. PF UPJŠ/USPV/13	**Course name:** Introduction to Study of Sciences
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week: Per study period:** 12s / 3d **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 1.	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 1731

abs	n
86.48	13.52

Provides:
Date of last modification: 25.09.2019
Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/ MTCa/13	**Course name:** Mathematics I for chemists

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: I.

Prerequisities:

Conditions for course completion:
According to the results from the semester and in view of the results of the written final test.

Learning outcomes:
To obtain basic knowledge on functions of one variable and their properties; to be able to apply the theory in concrete excercises.

Brief outline of the course:
Functions, basic properties. Elementary functions. Continuous functions. Limits. Derivation and its geometric aplications. Theorems about continuous functions. Behaviour of functions. Indefinite integrals, basic methods of integration. Definite integral and its applications.

Recommended literature:
S. Lang: A First Course in Calculus, Springer Verlag, 1998

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 260

A	B	C	D	E	FX
15.0	13.46	19.23	23.08	27.69	1.54

Provides: RNDr. Erika Mihaliková, Mgr. Katarína Lučivjanská, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚMV/MTCb/13	**Course name:** Mathematics II for chemists

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

Number of ECTS credits: 5

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚMV/MTCa/13

Conditions for course completion:
Two written tests and one homework with excercises from the whole semester, final test.
According to the results from the semester and in view of the results of the written final test.

Learning outcomes:
To develop acquired knowledge of mathematical analysis with knowledge on linear algebra and functions of more variables. To learn to solve basic types of differential equations and know how to use them to model real-world phenomena. To learn to solve problems about infinite series.

Brief outline of the course:
System of linear algebraic equations, determinants. Functions of more variables, continuity and limits, partial derivations, local extremes of functions of two variables. Some types of differential equations. Series, functional series, Taylor and MacLaurin series.

Recommended literature:
1. S. Lang: A First Course in Calculus, Springer Verlag, 1998
2. Huťka V., Benko E., Ďurikovič V.: Matematika, Alfa, Bratislava 1991.
3. Došlá, Z.: Matematika pro chemiky, 1.díl. Masarykova univerzita, Brno, 2010.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 211

A	B	C	D	E	FX
13.74	15.17	19.91	23.22	25.59	2.37

Provides: doc. RNDr. Stanislav Lukáč, PhD., RNDr. Viera Šottová, PhD., Mgr. Zuzana Šárošiová

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ GLP/12	**Course name:** Methodology of experiment. Fundamentals.

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:
On the basis of prepared seminary works, and the elaborated final written project.
On the basis of continuous assessment, written and oral examination.

Learning outcomes:
Correct and theoretically based processing and evaluation of the results in the experimental practice.
Evaluation of measurement uncertainties.

Brief outline of the course:
Introduction and basics of statistical evaluation of experimental results.
The basic formulas used in the processing of the results of the chemical and biological experiments.
Distribution of the results of measurements, measures of central tendency and spread. Assessment of the precision, of accuracy, and reliability of the results.
Uncertainties and errors of measurements.
Calibration in analytical chemistry.
Evaluation of analytical methods.
Solving of the typical examples in the frame of the practical lectures.

Recommended literature:
Brereton R. G.: Chemometrics, Wiley, 2003
Harvey D.: Modern Analytical Chemistry, McGraw-Hill, 2000
J.N. Miller, J.C. Miller: Statistics and Chemometrics for Analytical Chemistry, Pearson Education Limited, 2010

Course language:

Notes:

Course assessment
Total number of assessed students: 17

A	B	C	D	E	FX
23.53	29.41	17.65	0.0	29.41	0.0

Provides: doc. Ing. Viera Vojteková, PhD.

Date of last modification: 31.03.2021
Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ NANO/09	**Course name:** Nanotechnology

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 3., 5.

Course level: I.

Prerequisities:

Conditions for course completion:
Examination.

Learning outcomes:
To provide the students with basic knowledge of nanotechnology, nanomaterials as well as preparation and investigation methods. Discusses current and future nanotechnology applications in engineering, physics, chemistry, biology, electronics and computing, energy and medicine.

Brief outline of the course:
Properties of nanomaterials. Methods of preparation of thin layers and nanostructured surfaces. Methods of submicron-sized structures production. Nanodevices and chips. Methods of nanomaterials structure investigation. Nanodevices and chips. Nanofluidic systems in biology, medicine , energy storage and catalysis.

Recommended literature:
1. Nanotechnológie, A. Oriňák, R. Oriňáková, A. Fedorková, PF UPJŠ, 2012.
2. Introduction to Nanotechnology, C. Poole Jr., F.J. Owens, Wiley (2003).
3. Nanoelectronics and Nanosystems, Karl Goser, Peter Glosekotter, Jan Dienstuhl., Springer, 2004.
4. Nano: The Essentials: T. Pradeep. McGraw – Hill education – 2007.
5. Nanofabrication Towards Biomedical Applications, Techniques, Tools, Applications and Impact. 2005 - By Challa, S.S.R. Kumar, Josef Hormes, Carola Leuschaer. Wiley – VCH.

Course language:

Notes:

Course assessment
Total number of assessed students: 197

A	B	C	D	E	FX	N	P
26.4	23.86	24.87	13.2	7.11	1.02	0.0	3.55

Provides: doc. RNDr. Andrea Straková Fedorková, PhD., prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc.

Date of last modification: 20.09.2017
Approved: doc. RNDr. Ivan Potočňák, PhD.

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 ECTS credits: 5	
Recommended semester/trimester of the course: 6.	
Course level: I., II.	
Prerequisities:	
Conditions for course completion: Practical exercise. Presentation. 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:	
Notes:	

Course assessment
Total number of assessed students: 51

A	B	C	D	E	FX
41.18	27.45	17.65	7.84	3.92	1.96

Provides: RNDr. Andrea Morovská Turoňová, PhD., RNDr. František Kaľavský, doc. RNDr. Andrea Straková Fedorková, PhD.

Date of last modification: 29.03.2021

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/OP/14	**Course name:** Odborná prax
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 2t **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course:	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 5

abs	n
100.0	0.0

Provides: doc. RNDr. Zuzana Vargová, Ph.D.
Date of last modification: 03.05.2015
Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ OP1/17	**Course name:** Odborná prax
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 2t **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course:	
Course level: I.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 3

abs	n
100.0	0.0

Provides: doc. RNDr. Zuzana Vargová, Ph.D.
Date of last modification:
Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ OCH1a/10	**Course name:** Organic Chemistry I

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:
Written test

Learning outcomes:
Aim of the course is to provide the students with a knowledge of basic organic chemistry

Brief outline of the course:
Alkenes Electrophilic Additions Strong Brønsted Acids Lewis Acids (non-Proton Electrophiles) Electrophilic Halogen Reagents Other Electrophilic Reagents Reduction Oxidation Radical Additions Allylic Substitution Alkynes Addition Reactions Hydrogenation Electrophiles Hydration & Tautomerism Hydroboration Nucleophilile Addition & Reduction Acidity of Terminal Alkynes (Substitution of H) Alkyl Halides General Reactivity Substitution(of X) SN2 Mechanism SN1 Mechanism Elimination (of HX) Summary of Substiution vs. Elimination Substitution by Metals Elimination Reactions of Dihalides Alcohols Reactions of Alcohols Substitution of the Hydroxyl H Substitution of the Hydroxyl Group Elimination of Water Oxidation of Alcohols Reactions of Phenols Acidity of Phenols Ring Substitution of Phenols Oxidation to Quinones Aromatic compounds Electrophilic Substitution A Substitution Mechanism Reactions of Substituted Benzenes Reaction Characteristics Reactions of Disubstituted Rings Reactions of Substituent Groups Nucleophilic Substitution, Elimination & Addition Reactions Amines Basicity of Nitrogen Compounds Acidity of Nitrogen Compounds Important Reagent Bases Reactions of Amines Electrophilic Substitution at Nitrogen Preparation of 1°-Amines Preparation of 2° & 3°-Amines Reactions with Nitrous Acid Reactions of Aryl Diazonium Intermediates Elimination Reactions of Amines Oxidation States of Nitrogen Basic information: Aldehydes & Ketones Carboxylic Acids Carboxylic Derivatives Natural products, Saccharides, Aminoacids, Biologically active compounds

Recommended literature:
1. on-line PowerPoint presentations in the MOODLE at http://moodle science.upjs.sk/.
2. Organic Chemistry, Clayden, Greeves Warren & Wothers, Oxford University Press, 2010.
3. Organic Chemistry, Solomon, Willey, 2009.
4. Organic Chemistry, Pavol Zahradník, Mária Mečiarová, Peter Magdolen, Comenius University in Bratislava, 2019, ISBN: 978-80-223-4589-7.

Course language:

Notes:

Course assessment
Total number of assessed students: 789

A	B	C	D	E	FX
14.07	9.51	17.87	25.35	31.69	1.52

Provides: prof. RNDr. Jozef Gonda, DrSc., doc. RNDr. Miroslava Martinková, PhD.

Date of last modification: 05.02.2021

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/POC1/03	**Course name:** Organic chemistry - Lab

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 ECTS credits: 6

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities: ÚCHV/OCH1a/03 and leboÚCHV/OCH1a/09 and leboÚCHV/OCH1a/10

Conditions for course completion:
Two tests 2x25 p., twelve reports 12x2 p., laboratory skills 12 p., short quizzes and questions 14 p. A 100 p. in total.
Based on continuous evaluation.

Learning outcomes:
Students will become familiar with the basic isolation and purification methods used in a synthetic laboratory. Students should master basic laboratory technique and be able to apply the theoretical knowledge from the basic course of organic chemistry in simple synthetic projects.

Brief outline of the course:
Preparation, isolation, purification and identification of organic compounds. The emphasis is on gaining the experimental skills in synthesis of organic compounds, distillation, extraction, crystallization, sublimation and thin-layer chromatography.

Recommended literature:
1. Handout with experimental procedures http://kekule.science.upjs.sk/pochu.
2. Organic chemistry lectures.

Course language:
Slovak or English

Notes:

Course assessment
Total number of assessed students: 429

A	B	C	D	E	FX
49.65	31.7	13.29	3.96	0.7	0.7

Provides: RNDr. Kvetoslava Stanková, PhD., RNDr. Jana Špaková Raschmanová, PhD., RNDr. Margaréta Takácsová, PhD., RNDr. Slávka Hamuľaková, PhD., RNDr. Martin Walko, PhD., RNDr. Zuzana Kudličková, PhD., RNDr. Mária Vilková, PhD., RNDr. Ladislav Janovec, PhD., RNDr. Mariana Budovská, PhD.

Date of last modification: 24.01.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 7

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities:

Conditions for course completion:
Two tests at lecture in 7 and 14th week. Test max 50 points. At least 25 points required.
Written exam, 100 points. At least 49% of points required.
Final evaluation: A 90-100 pts, B 80-89 pts, C 70-79 pts, D 60-69 pts, E 50-59 pts, FX 0-49 pts

Learning outcomes:
Second part of two-semester organic chemistry course.

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

Recommended literature:

1. on-line moodle.science.upjs.sk
2. Organic Chemistry, Clayden, Greeves Warren & Wothers, Oxford University Press, 2010
3. Organic Chemistry, Solomon, Willey, 2009
4. Organic chemistry, John McMurry, Sixth Edition, 2004, Brooks/Cole, a Thomson Learning Company, ISBN: 0534389996.

Course language:

Notes:

Course assessment

Total number of assessed students: 610

A	B	C	D	E	FX
12.62	10.98	16.56	21.97	34.92	2.95

Provides: prof. RNDr. Jozef Gonda, DrSc., doc. RNDr. Miroslava Martinková, PhD.

Date of last modification: 05.02.2021

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ MOC1/00	**Course name:** Organic reactions mechanisms

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:
Midterm exam.
Final written exam.

Learning outcomes:
Understanding of the organic reactions mechanisms at the molecular level, and ability to devise the course of the organic reactions.

Brief outline of the course:
Analysis of important reaction mechanisms of substitution (SN, SE, SR, SNi), addition (AdN, AdE, AdR) and elimination (E1, E2, Ei) reactions, molecular rearrangements and redox reactions. Reaction intermediates, acid-base properties.

Recommended literature:
1. Mechanizmy organických reakcií, R. Šebesta, Š. Toma, Univerzita Komenského v Bratislave, Vydavateľstvo UK, 2015.
2. Štruktúra a reaktivita organických zlúčenín, M. Putala, Š. Toma,Univerzita Komenského v Bratislave, Vydavateľstvo UK, 2015.
3. Writing Reaction Mechanisms in Organic Chemistry, Kenneth A. Savin, Academic Press, 2015.
5. March's advanced organic chemistry, March J., Smith, M. B.: John Wiley & Sons, 2001.

Course language:

Notes:

Course assessment
Total number of assessed students: 180

A	B	C	D	E	FX
47.78	24.44	19.44	6.11	1.67	0.56

Provides: RNDr. Monika Tvrdoňová, PhD., RNDr. Mária Vilková, PhD.

Date of last modification: 04.02.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ FCH1a/03	**Course name:** Physical Chemistry I

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

Number of ECTS credits: 7

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities: ÚMV/MTCa/13,ÚMV/MTCb/13

Conditions for course completion:
Two partial tests from computational seminars in 6th and 12th week of semester.
Examination.

Learning outcomes:
Basic course on thermodynamics, chemical and phase equilibria.

Brief outline of the course:
State of aggregation,laws for ideal and real gases, liquids and solids - characteristics and properties. Principles of thermodynamics, thermodynamic equilibrium, characteristic thermodynamic changes, heat, work, internal energy, enthalpy, entropy, 1st, 2nd and 3rd law of thermodynamics, Gibbs energy. Thermochemistry, heat of reaction, 1st and 2nd thermometric laws, enthalpy of formation, enthalpy of combustion, calorimetry. Phase equilibria, Gibbs´ phase rule, phase diagrams for 1-, 2- and 3-componental systems, colligative properties, activity. Adsorption, adsorption isotherms. Diffusion. Chemical equilibrium, van´t Hoff´s reaction isotherm, isobar and isochore, influence of temperature and pressure on chemical equilibrium. Electrochemistry. Conductivity of electrolytes, utilization, Faraday´s law, strong electrolytes - theory, activity coefficients, ionic strength. Weak electrolytes, theories of acids and bases, buffer solutions, hydrolysis of salts.

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

Course language:

Notes:

Course assessment
Total number of assessed students: 595

A	B	C	D	E	FX
15.29	18.82	20.84	17.82	17.65	9.58

Provides: prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Jana Shepa, RNDr. Ondrej Petruš, PhD., RNDr. Radka Gorejová, RNDr. Dominika Capková
Date of last modification: 20.09.2017
Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 4.

Course level: I.

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

Conditions for course completion:
Two partial tests from computational seminars in 6th and 12th week of semester.
Examination.

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

Brief outline of the course:
Electrochemistry. Equilibrium homogeneous processesn electrolyte solutions. Charge transfer in electrolyte solutions. Nonequilibrium homogeneous processes. Trnasport processes in electrolyte solutions. Conductance and molar conductivity. Hindering effects. Transport numbers. Equilibrium in heterogeneous electrochemical systems. Pocesses on charged interfaces. Electrochemical cells and fuel cells. Classification of electrode types. Concentration cells. Electrolysis. Electrochemical power sources. Potentiometry. Electrical double layer. Surface tension.
Chemical kinetics. Homogeneous processes. Reaction rate. Reaction order. Classification of chemical reactions. Elementary chemical reactions. Mechanism and kinetics equations of complicated chemical processes. Methods of rate low determination. Theory of chemical kinetics. Ttemperature dependence of reaction rates. Collision theory. Activated complex theory. Chain reactions. Structure and rate lows of chain reactions. Explosion. Polymerisation reactions. Photochemical reactions. Catalysis. Theory of homogeneous catalysis. Chemical oscillation reactions. Heterogeneous processes. Difusion. Physical and chemical adsorption. Adsorption and diffusion. Processes in heterogeneous electrochemical systems. Electrode kinetics, activation and diffusive mechanism of charge transfer.
Application of theoretical relationships on the solving of concrete problems and on the calculation of examples during seminars.

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

Course language:

Notes:

Course assessment
Total number of assessed students: 554

A	B	C	D	E	FX
15.52	18.77	22.74	18.95	20.22	3.79

Provides: prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Jana Shepa, RNDr. Ondrej Petruš, PhD., RNDr. Radka Gorejová, RNDr. Dominika Capková

Date of last modification: 20.09.2017

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ CHF1a/03	**Course name:** Physics I

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
Test
Examination

Learning outcomes:
To learn basic knowledges of mechanics, thermodynamics and electrostatics. To learn to apply the well- handled curriculum for numeric solving of relevant physical problems and exercises.

Brief outline of the course:
Kinematics and mechanics of a particle. Motion in the gravitational field. Newton's laws of motion. Newton's law of gravitations. Work and mechanical energy. Mechanics of a system of particles. 1st and 2nd impulse theorems. Rotational movement of particles. Moment of inertia. Deformation of solids. Hooke's law. Hydrostatics and hydrodynamics of fluids. Kinetic theory of gases. Thermodynamic laws. Entropy. Heat transfer.

Recommended literature:
1. H.E.Gettys, F.J.Keller, M.J.Skove: Physics – classical and modern, Mc Graw – Hill Book Co., New York, 1989.
2. F.J.Keller, H.E.Gettys, M.J.Skove: Physics, Mc Graw – Hill, Inc., New York, 1993.

Course language:

Notes:

Course assessment
Total number of assessed students: 813

A	B	C	D	E	FX
15.5	18.45	20.3	19.31	16.24	10.21

Provides: doc. RNDr. Adriana Zeleňáková, PhD., RNDr. Róbert Tarasenko, PhD., RNDr. Andrea Lachová

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/CHF1b/12	**Course name:** Physics II

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 1 **Per study period:** 42 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: (ÚFV/CHF1a/03,ÚFV/UVF/12)

Conditions for course completion:
solution of numerical tasks and study of theory, consultation and other communication via email

Learning outcomes:
Introduction to basic knowledge of classical electricity and magnetism, Electric and magnetic properties of gases, liquids and solids, electric oscillations, electromagnetic waves, optics and quantum-mechanical properties of atom.

Brief outline of the course:
Electrostatics. Electrodynamics. Electric current. Ohm's law. Kirchhoffs' laws. Work and power of electric current. Magnetism. Magnetic field. Electromagnetic induction. Transformers. Magnetic materials in magnetic field. Types of magnetic materials. Electric oscillations. Alternating current. LCR circuits. Band theory of solids. Semiconductors. Thermoelectric effect. Electric current in liquids and gasses. Electromagnetic waves. Maxwell's equations. Polarization. Sources of light. Photoelectric effect. Quantum mechanics. Wave function. Spin. Pauli's exclusion principle.

Recommended literature:
1. F.J.Keller, H.E.Gettys, M.J.Skove: Physics, Mc Graw – Hill, Inc., New York, 1993.

Course language:
english

Notes:

Course assessment
Total number of assessed students: 684

A	B	C	D	E	FX
9.5	16.08	23.39	22.81	16.67	11.55

Provides: doc. RNDr. Alžbeta Orendáčová, DrSc., Mgr. Tomáš Samuely, PhD., RNDr. Róbert Tarasenko, PhD.

Date of last modification: 29.03.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ZP2/99	**Course name:** Physics practical

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

Number of ECTS credits: 3

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:
The goal is to get acquainted with the real physical experiments, a complement theoretical knowledge connected in the subject of General Physics by the practical way.
Prekladač Google pre firmy:Nástroje pre prekladateľovPrekladač webových stránokNástroj na hľadanie nových trhov
The goal is to get acquainted with the real physical experiments, a comp

Brief outline of the course:
The goal of this laboratory exercises is to familialize the students with measurement metods, with kinds and calculus of mistakes, with measured results processing, and with presentation of results. Students selected for practical tasks completed and verified knowledge of mechanics and molecular physics, electricity and magnetism, and optics.

Recommended literature:
Degro, J., Ješková, Z., Onderová Ľ., Kireš, M.: Basic physical measurements I, Ed. PF UPJŠ Košice 2007 (in slovak)
Brož, J. and all.: Fundamental physical measurements (I), SPN, 1967
(in czech)

Course language:

Notes:

Course assessment
Total number of assessed students: 455

A	B	C	D	E	FX
40.0	35.82	20.22	2.64	0.66	0.66

Provides: doc. RNDr. Adriana Zeleňáková, PhD., doc. RNDr. Ján Füzer, PhD.

Date of last modification: 29.03.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/PACH/03	**Course name:** Practical from Inorganic Chemistry

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 ECTS credits: 6

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚCHV/PRCH1/10,ÚCHV/CHV1/99,ÚCHV/PRCH2/10

Conditions for course completion:
test
Results from reports, tests. Achieved practical abilities.

Learning outcomes:
The practical acquirements at preparation and study of inorganic compounds and their physico-chemical properties by common laboratory techniques.

Brief outline of the course:
The utilization of common laboratory techniques and also the work in anaerobic, inert and non-aqueous conditions at preparation of elements (H2, O2, Cu, Ni), oxides(CO2, Al2O3·xH2O), nitrides(Mg3N2), acids (HNO3, H3BO3), salts((NH4)2SO4, KMnO4), binary salts(NH4)Fe(SO4)2·12H2O), halides (CuCl, CuCl2·2H2O, SnI4, CuBr2) and coordination compounds ([Cr2(CH3COO)4(H2O)2], [CoCl2(en)2]Cl, [Cu(NH3)4]SO4·H2O, K3[Al(C2O4)3]·3H2O).

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 442

A	B	C	D	E	FX
55.66	35.29	6.11	2.26	0.68	0.0

Provides: RNDr. Martin Vavra, PhD., doc. RNDr. Zuzana Vargová, Ph.D., doc. RNDr. Juraj Kuchár, PhD., RNDr. Miroslav Almáši, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ PANCH/06	**Course name:** Practical in Analytical Chemistry

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 ECTS credits: 6

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
Assessment

Learning outcomes:
Application of theoretical knowledge of quantitative analysis into analytical laboratory practise

Brief outline of the course:
Practical in quantitative analysis. Quantitative methods. Gravimetry, general principles of method. Volumetric methods. Preparation of accurate solutions. Indication of equvivalency point. Titration curves, calculations in volumetric analysis, measurement errors. Acidimetry, alkalimetry. Manganometry. Iodometry. Complexometry. Argentometry. Selected instrumental analytical methods - electrochemical, optical, separation. Evaluation of the results in instrumental analysis.

Recommended literature:
D.Harvey: Modern Analytical Chemistry. McGraw Hill, Boston, 2000.
D.A.Skoog: Principles of Instrumental Analysis. Saunders Col. Publishing, New York 1985.
E.Prichard: Quality in the Analytical Chemistry Laboratory, Wiley, 1995

Course language:

Notes:

Course assessment
Total number of assessed students: 417

A	B	C	D	E	FX
53.0	24.94	17.03	2.88	2.16	0.0

Provides: doc. RNDr. Katarína Reiffová, PhD., doc. Ing. Viera Vojteková, PhD., RNDr. Rastislav Serbin, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/PFCH/03	**Course name:** Practical in Physical Chemistry

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 ECTS credits: 6

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚCHV/FCH1a/03

Conditions for course completion:
Approved laboratory reports.
Assessment

Learning outcomes:
Theoretical principles, description of each technique and appropriate physical chemistry experiments.

Brief outline of the course:
Experimental verification of theoretical knowledge on thermodynamics, thermochemistry, chemical equilibria (determination of enthalpy, phase diagrams), colligative properties (cryoscopy, ebulioscopy), adsorption.
Experimental verification of theoretical knowledge on electrochemistry (conductivity, dissociation constants, activity coefficients, electromotive force of galvanic cell, Daniell cell, potentials, polarography) and chemical kinetics (determination of rate constants).

Recommended literature:
B.P. Levitt: Findlay´s Practical Physical Chemistry, Longman, London 1973
W.J. Moore: Physical Chemistry, Longman, London 1972
P.W. Atkins: Physical Chemistry, Oxford University Press, Oxford, New York 2002

Course language:

Notes:

Course assessment
Total number of assessed students: 400

A	B	C	D	E	FX
65.5	24.75	7.25	1.0	1.5	0.0

Provides: RNDr. František Kaľavský, RNDr. Andrea Morovská Turoňová, PhD.

Date of last modification: 29.03.2021

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚTVŠ/ ÚTVŠ/CM/13	**Course name:** Seaside Aerobic Exercise

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: Per study period: 36s
Course method: combined, present

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:
Conditions for course completion:
Attendance

Learning outcomes:
Learning outcomes:
Students will be provided an overview of possibilities how to spend leisure time in seaside conditions actively and their skills in work and communication with clients will be improved. Students will acquire practical experience in organising the cultural and art-oriented events, with the aim to improve the stay and to create positive experiences for visitors.

Brief outline of the course:
Brief outline of the course:
1. Basics of seaside aerobics
2. Morning exercises
3. Pilates and its application in seaside conditions
4. Exercises for the spine
5. Yoga basics
6. Sport as a part of leisure time
7. Application of projects of productive spending of leisure time for different age and social groups (children, young people, elderly)
8. Application of seaside cultural and art-oriented activities in leisure time

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 41

abs	n
12.2	87.8

Provides: Mgr. Agata Horbacz, PhD.
Date of last modification: 15.03.2019
Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ASM/03	**Course name:** Separation 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 ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

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

Conditions for course completion:
Examination

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

Brief outline of the course:
Basic principles, classification, theory and applications of separation methods. Extraction - LLE, SPE, SPME. Chromatographic methods - theory, classification. Gas chromatography, retention mechanisms, stationary phases and their selection. Instrumentation, detectors in GC. Data evaluation - qualitative and quantitative analysis. High-performance liquid chromatography, principles, classification. Stationary and mobile phases in LC, instrumentation. Applications. Comparison of GC and HPLC methods.
Planar chromatographic methods - TLC, HPTLC, PC.
Electrophoretic techniques - CE, ITP, HPCE. MEKC - micellar electrokinetic capillary chromatography. Lab-on-a-Chip (LOC), TAS, electrophoresis on a chip, principles and applications.

Recommended literature:
Krupčík, J.: Separačné metódy, SVŠT CHTF, Bratislava 1983.
Skoog D. A., Leary J. J.: Principles of instrumental analysis. Saunders College Publishing, New York 1997.
Pawliszyn J., Lord H. L.: Handbook of sample preparation, Wiley 2010.
Churáček J., Jandera P.: Úvod do vysokoúčinné kapalinové chromatografie, SNTL, Praha 1984.

Course language:

Notes:

Course assessment
Total number of assessed students: 460

A	B	C	D	E	FX
27.61	25.0	26.09	13.04	5.87	2.39

Provides: doc. RNDr. Taťána Gondová, CSc.

Date of last modification: 03.02.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ASC1/99	**Course name:** Separation Methods Practicals

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 5 **Per study period:** 70
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚCHV/ASM/03

Conditions for course completion:
Laboratory reports, test.
Assessment

Learning outcomes:
To obtain practical experiences for applications of separation methods in analytical practice.

Brief outline of the course:
Application of gas chromatography, high-performance liquid chromatography and thin-layer chromatography methods in analysis. Application of electrophoretic methods. Spectrophotometric determination of selected analytes after extraction treatment of sample. Application of ion-exchange chromatography in analytical practice.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 125

A	B	C	D	E	FX
88.0	11.2	0.8	0.0	0.0	0.0

Provides: doc. RNDr. Katarína Reiffová, PhD., doc. RNDr. Taťána Gondová, CSc.

Date of last modification: 03.02.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVa/11	**Course name:** Sports Activities I.
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** combined, present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 1.	
Course level: I., I.II., II.	
Prerequisities:	
Conditions for course completion: Conditions for course completion: Min. 80% of active participation in classes.	
Learning outcomes: Learning outcomes: Increasing physical condition and performance within individual sports. Strengthening the relationship of students to the selected sports activity and its continual improvement.	
Brief outline of the course: Brief outline of the course: Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, basketball, badminton, floorball, yoga, pilates, swimming, body-building, indoor football, self-defence and karate, table tennis, sports for unfit persons, streetball, tennis, and volleyball. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 14050

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
88.48	0.07	0.0	0.0	0.0	0.04	7.51	3.9

Provides: Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Marcel Čurgali, Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD.

Date of last modification: 18.03.2019

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ TVb/11	**Course name:** Sports Activities II.

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: I., I.II., II.

Prerequisities:

Conditions for course completion:
Conditions for course completion:
Final assessment and active participation in classes - min. 75%.

Learning outcomes:
Learning outcomes:
Increasing physical condition and performance within individual sports. Strengthening the relationship of students to the selected sports activity and its continual improvement.

Brief outline of the course:
Brief outline of the course:
Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, basketball, badminton, floorball, yoga, pilates, swimming, body-building, indoor football, self-defence and karate, table tennis, sports for unfit persons, streetball, tennis, and volleyball.
In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness.
In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.

Recommended literature:

Course language:

Notes:

Course assessment

Total number of assessed students: 11330

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
85.75	0.56	0.02	0.0	0.0	0.05	9.87	3.75

Provides: Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Marcel Čurgali, Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD.

Date of last modification: 18.03.2019

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚTVŠ/ TVc/11	**Course name:** Sports Activities III.

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I., I.II., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 8383

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
90.11	0.05	0.01	0.0	0.0	0.02	4.04	5.76

Provides: Mgr. Marcel Čurgali, Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚTVŠ/ TVd/11	**Course name:** Sports Activities IV.

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I., I.II., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 5101

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
85.2	0.29	0.04	0.0	0.0	0.0	6.76	7.7

Provides: Mgr. Marcel Čurgali, Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ST/03	**Course name:** Stereochemistry

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:
Test in 6th week. Final test (at least 49% required).

Learning outcomes:
Stereochemistry of molecules. Relationship between stereochemistry and their structure, energy, physical and spectral properties.

Brief outline of the course:
Stereochemistry - basic terms and principles: Isomerism, Chirality and Symmetry, Configuration and Conformation Isomers, cis-trans Isomerism, Curtius-Hammet Priciple, Enantiomers, Diastereoisomers, Racemates, Absolute configuration, Relative Configuration, Fischer Projection Formulas, Zig-Zag Projection Formulas, Harworth Formulas, Achiral Diastereomers (meso-Compounds), Prochirality, Atropoisomers. Stereochemistry of Carbohydrates. Stereoselective synthesis - basic principles.

Recommended literature:
Eliel L. E.: Stereochemistry of Organic Compounds, John Wiley & Sons, Inc. 2001.

Course language:

Notes:

Course assessment
Total number of assessed students: 187

A	B	C	D	E	FX
67.91	11.76	11.23	2.67	6.42	0.0

Provides: prof. RNDr. Jozef Gonda, DrSc.

Date of last modification: 04.02.2020

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ MUS/03	**Course name:** Structure determination - spectroscopic methods

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 4 **Per study period:** 42 / 56
Course method: present

Number of ECTS credits: 10

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Fundamentals of molecular spectroscopy, mass spectrometry and magnetic methods as powerful tools for structure determination in chemistry. Ultraviolet and visible spectroscopy. Emission spectroscopy. Symmetry and group theory. Infrared and Raman spectroscopy. Mass spectrometry in organic and analytical chemistry and biochemistry. Nuclear magnetic resonance - NMR. Chemical shift and splitting of signals by spin-spin coupling. Coupling constants. 1H NMR, 13C NMR, NMR of other nuclei. Two- and more dimensional NMR. NMR applications. Nuclear quadrupolar resonance - NQR, Electron parameganetic resonance - EPR.
Mossbauer spectroscopy. Relations between the spectra and structure, properties and reactions of chemical compound. Methods and instruments used for spectra measurements. Combined application of spectral methods for solution of chemical problems.

Recommended literature:
1. M. Hesse, H. Meier, B. Zeeh: Spectroscopic Methods in Organic Chemistry. Thieme, NY 1997.
2. L.G.Wade, Jr.: Organic Chemistry. Prentice Hall International, Inc. Englewood Cliffs, New Yersey 1995.

Course language:

Notes:

Course assessment
Total number of assessed students: 564

A	B	C	D	E	FX
18.44	28.19	30.32	18.97	4.08	0.0

Provides: doc. RNDr. Ján Imrich, CSc., RNDr. Jana Špaková Raschmanová, PhD., doc. RNDr. Juraj Kuchár, PhD.

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ SVKB/04	**Course name:** Students Scientific Conference

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

Number of ECTS credits: 4

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:
Individual scientific work of students. Publishing of obtained results in a written form and as a public presentation.

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 164

A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0

Provides:

Date of last modification: 03.05.2015

Approved: doc. RNDr. Ivan Potočňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ LKSp/13	**Course name:** Summer Course-Rafting of TISA River
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 36s **Course method:** combined, present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisities:	
Conditions for course completion: Conditions for course completion: Attendance Final assessment: Raft control on the waterway (attended/not attended)	
Learning outcomes: Learning outcomes: Students have knowledge of rafts (canoe) and their control on waterway.	
Brief outline of the course: Brief outline of the course: 1. Assessment of difficulty of waterways 2. Safety rules for rafting 3. Setting up a crew 4. Practical skills training using an empty canoe 5. Canoe lifting and carrying 6. Putting the canoe in the water without a shore contact 7. Getting in the canoe 8. Exiting the canoe 9. Taking the canoe out of the water 10. Steering a) The pry stroke (on fast waterways) b) The draw stroke 11. Capsizing 12. Commands	
Recommended literature:	
Course language:	
Notes:	

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

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:** combined, present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisities:	
Conditions for course completion: Conditions for course completion: Attendance Final assessment: continuous fulfilment of all tasks within the course	
Learning outcomes: Learning outcomes: Students will be familiarized with principles of safe stay and movement in extreme natural conditions as they will obtain theoretical knowledge and practical skills to solve the extraordinary and demanding situations connected with survival and minimization of damage to health. The course develops team work and students will learn how to manage and face the situations that require overcoming of obstacles.	
Brief outline of the course: Brief outline of the course: Lectures: 1. Principles of behaviour and safety for movement and stay in unknown mountains 2. Preparation and leadership of tour 3. Objective and subjective danger in mountains 4. Principles of hygiene and prevention of damage to health in extreme conditions Exercises: 1. Movement in terrain, orientation and navigation in terrain (compasses, GPS) 2. Preparation of improvised overnight stay 3. Water treatment and food preparation.	
Recommended literature:	
Course language:	
Notes:	

Course assessment Total number of assessed students: 393	
abs	n
44.53	55.47
Provides: MUDr. Peter Dombrovský, Mgr. Marek Valanský	
Date of last modification: 15.03.2019	
Approved: doc. RNDr. Ivan Potočňák, PhD.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ FTEP1/03	**Course name:** Theory of electrochemical processes

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 1 **Per study period:** 28 / 14
Course method: present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 6.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Partial test and final course test.
Examination.

Learning outcomes:
To provide the students with basic knowledge on theory of electrochemical processes.

Brief outline of the course:
Fundamentals of electrochemical thermodynamics. Electrochemical potential and equilibrium at the electrode/solution interface. Electric double layer - fundamental models of the double layer structure. Adsorption phenomena at the electrode/solution interface. Fundamentals of electrochemical kinetics. Polarization curves and informations provided by them (charge transfer coefficient, heterogeneous rate constant). Influence of transport processes on electrode kinetics (convection, diffusion, migration). Reversibility of electrode reactions. Influence of the double layer structure on kinetics of electrode processes. Theory of electrolytic deposition.
Experimental methods for electrochemical kinetics (single pulse and multipulse potentiostatic methods, cyclic voltammetry with dc and dp scan, coulometry, chronopotentiometry). Spectroelectrochemistry. QCM

Recommended literature:
J.O´M. Bockris, A.K.N. Reddy: Modern Electrochemistry, Macdonald, London 2002
A.J. Bard, L.R. Faulkner: Electrochemical Methods, Fundamentals and Applications, John Wiley and Sons, New York 1980
J. Koryta, J. Dvořák, L. Kavan: Principles of Electrochemistry, John Wiley & Sons, New York 1993
E. Scholz (Ed.): Electroanalytical Methods, Guide to Experiments and Applications, Springer Vrlg., Berlin 2002
T. Engel, P. Reid: Physical Chemistry, Pearson Educat. Inc., San Francisco 2006

Course language:

Notes:

Course assessment
Total number of assessed students: 34

A	B	C	D	E	FX
70.59	17.65	5.88	0.0	5.88	0.0

Provides: prof. RNDr. Renáta Oriňaková, DrSc., Mgr. Ján Macko, PhD.

Date of last modification: 20.09.2017

Approved: doc. RNDr. Ivan Potočňák, PhD.