COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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 credits: 6

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities: ÚCHV/VCHU/14 or ÚCHV/VCHU/15 or ÚCHV/VCHU/10 or ÚCHV/VACH/10

Conditions for course completion:
3x test of analytical calculations.
Examination

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

Brief outline of the course:
Subject and role of analytical chemistry. General principles and procedures - sampling, sample pre-treatment. Preparation of solutions. Evaluation of the results.
Classification of analytical reactions. Qualitative analysis of cations and anions. Basic principles of organic analysis.
Methods of quantitative analysis. General principles of gravimetry. Volumetric analysis.
Instrumental methods of analytical chemistry (basic principles, instrumentaion and applications) - electroanalytical, optical and separation methods.

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

Course language:

Notes:

Course assessment
Total number of assessed students: 507

A	B	C	D	E	FX
17.16	18.34	25.25	26.04	8.68	4.54

Provides: doc. RNDr. Taťána Gondová, CSc.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ BP1a/04	**Course name:** Bachelor Work
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of credits: 2	
Recommended semester/trimester of the course: 5.	
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: 384	

abs	n
100.0	0.0

Provides:
Date of last modification: 03.02.2014
Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ BP1b/04	**Course name:** Bachelor Work
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of credits: 6	
Recommended semester/trimester of the course: 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: 387	

abs	n
99.48	0.52

Provides:
Date of last modification: 03.02.2014
Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/MINU/03	**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 credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚCHV/VCHU/10 or ÚCHV/ZAC2/10 or ÚCHV/VACH/10 or ÚCHV/CHG/09 or ÚCHV/ZCF/03

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: 40

A	B	C	D	E	FX
67.5	25.0	7.5	0.0	0.0	0.0

Provides: doc. RNDr. Ivan Potočňák, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ BCHU/03	**Course name:** Biochemistry
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 credits: 5	
Recommended semester/trimester of the course: 5.	
Course level: I.	
Prerequisities: ÚCHV/VCHU/10 or ÚCHV/VCHU/15 or ÚCHV/VACH/10	
Conditions for course completion: test + oral examination	
Learning outcomes: The aim of biochemistry teaching is to acquire knowledge in the field of living organisms on the basis of their molecular structure and metabolism.	
Brief outline of the course: 1. Protein Structure and Function, Exploring proteins 2. DNA and RNA and the Flow of Genetic Information, Exploring genes 3. Enzymes: Basic Concepts and Kinetics, Catalytic Strategies and Regulatory Strategies 4. Carbohydrates (Monosaccharides, Disaccharides, Polysaccharides – Functions and Properties) 5. Lipids and Cells Membranes, Membrane Channels and Pumps 6. Metabolis: Basic Concepts and Design, Signal-Transduction Pathways 7. Glycolysis and Gluconeogenesis, Glycogen Metabolism 8. The Citric Acid Cycle and Glyoxylate Cycle 9. Oxidative Phosphorylation, The Light Reactions of Photosyntesis 10. The Calvine Cycle and the Pentose Phosphate Pathway 11. Fatty Acids Metabolism, Urea Cycle 12. DNA Replication, Transcription (RNA Synthesis) 13. Protein Synthesis & Degradation, the Integration of Metabolism	
Recommended literature: Škárka: Biochémia. Alfa, 1992 Voet a Voetová: Biochemie. Victoria Publishing, Praha, 1994 Stryer, L.: Biochemistry, W.H. Freeman and Company, New York, 1988	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 876

A	B	C	D	E	FX
16.44	18.49	21.12	21.92	19.06	2.97

Provides: doc. RNDr. Erik Sedlák, PhD., RNDr. Nataša Tomášková, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/PBCHU/03	**Course name:** Biochemistry Practical

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

Number of credits: 5

Recommended semester/trimester of the course: 6.

Course level: I.

Prerequisities: ÚCHV/BCHU/03

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

Learning outcomes:

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:
http://kosice.upjs.sk/~kbch/

Course language:

Notes:

Course assessment
Total number of assessed students: 272

A	B	C	D	E	FX
58.09	25.0	11.76	2.21	2.21	0.74

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

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, 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 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: 145

A	B	C	D	E	FX
44.14	31.03	15.86	2.07	6.9	0.0

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

Date of last modification: 03.02.2014
Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/KCHU/03	**Course name:** Coordination Chemistry

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

Number of credits: 4

Recommended semester/trimester of the course: 5.

Course level: I.

Prerequisities: ÚCHV/ACHU/03

Conditions for course completion:
Final written exam

Learning outcomes:
The student acquires basic knowledge on the coordination compounds, preparation, isomerism and properties of coordination compounds as well as about the chemical bonding in coordination compounds.

Brief outline of the course:
Definition and nomenclature of coordination compounds. Central atom and ligands, coordination numbers. Isomerism, preparation and stability of coordination compounds, chemical bonding in coordination compounds.

Recommended literature:
J. Ribas: Coordination Chemistry, Wiley-VCH, Weinheim, 2008.
J. C. Huheey, E. A. Keiter, R. L. Keiter: Inorganic Chemistry, Haper Collins, New York, 1993.
G. A. Lawrance: Introduction to Coordination Chemistry, Wiley, 2010.

Course language:

Notes:

Course assessment
Total number of assessed students: 60

A	B	C	D	E	FX
56.67	23.33	13.33	3.33	3.33	0.0

Provides: prof. RNDr. Juraj Černák, CSc., RNDr. Juraj Kuchár, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ OBPC/03	**Course name:** Defence of bachelor thesis

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

Number of credits: 0

Recommended semester/trimester of the course:

Course level: I.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Presentation of the thesis before the state exam committee.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 366

A	B	C	D	E	FX
83.33	10.66	4.37	0.82	0.55	0.27

Provides:

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ PCH1/00	**Course name:** Food chemistry

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

Number of credits: 4

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:
Based o excursions to food plants and analytical laboratories specialized on food analysis together with own prepared projects during seminars the students should gain general overview about food chemistry, basic legal documents, additives.

Brief outline of the course:
The main categories of substances in the most important group of food. Contamination of food. Physical and chemical properties of food and chemical reactions relative to obtaining, storing and preparing of food. Analytical methods for determination of quality of the food.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 238

A	B	C	D	E	FX
57.56	36.55	5.46	0.0	0.0	0.42

Provides: RNDr. Dušan Koščík, CSc., RNDr. Ján Elečko

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, 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 credits: 5

Recommended semester/trimester of the course: 3.

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: 52

A	B	C	D	E	FX
34.62	26.92	28.85	5.77	0.0	3.85

Provides: doc. RNDr. Katarína Reiffová, PhD.

Date of last modification: 03.02.2014
Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/PACU/03	**Course name:** General Course of Analytical Chemistry - Laboratory

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

Number of credits: 4

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚCHV/ANCHU/03

Conditions for course completion:
Assessment

Learning outcomes:
Application of theoretical knowledge to analytical laboratory practise

Brief outline of the course:
Practical in qualitative and quantitative analysis. Qualitative analysis, separation by selective precipitation. Quantitative methods. Gravimetry, general principles of method. Volumetric methods. Preparation of accurate solutions. Indication of equvivalency point. Titration curves, calculations in volumetric analysis. Acidimetry, alkalimetry. Manganometry. Iodometry. Complexometry. Selected Instrumental analytical methods.

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: 174

A	B	C	D	E	FX
53.45	30.46	12.64	1.15	2.3	0.0

Provides: RNDr. Rastislav Serbin, PhD., RNDr. Jana Šandrejová, PhD., RNDr. Lívia Kocúrová, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ VCHU/14	**Course name:** General Chemistry

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 4 / 2 **Per study period:** 56 / 28
Course method: present

Number of credits: 7

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
2 written tests
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. State of matter. Solutions. Chemical equilibrium. Basis of chemical thermodynamics and chemical kinetics. Classification of chemical reactions. Electrochemistry.

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

Course language:

Notes:

Course assessment
Total number of assessed students: 43

A	B	C	D	E	FX
20.93	27.91	32.56	13.95	4.65	0.0

Provides: doc. RNDr. Vladimír Zeleňák, PhD.

Date of last modification: 13.03.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, 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 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: 865

A	B	C	D	E	FX
16.07	19.31	25.09	23.12	15.72	0.69

Provides: RNDr. Martin Vavra, PhD., doc. RNDr. Zuzana Vargová, Ph.D., Mgr. Miroslav Almáši, PhD., RNDr. Lukáš Smolko

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ISC1a/00	**Course name:** Cheminformatics I

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

Number of credits: 2

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
seminar project

Learning outcomes:
Introductory course aimed at introducing students to the fundamental informatics techniques for chemistry-related disciplines. The class will cover a wide range of topics, including searching chemical information on internet, searching for patent information and work with the primary and secondary literature.

Brief outline of the course:
Searching, retrieving and use of the informations in chemistry. Using of "paper" resources (primary journals, Chemical Abstracts, Beilstein).Searching chemical information on Internet (Scirus, ScienceDirect, Scopus, Web of Science, Medline, NIST) and e-journals.

Recommended literature:
1. R.E. Maizell: How to find Chemical Information, John Wiley,
New York 1998
2. Internet resources for chemistry.

Course language:
slovak language and english language

Notes:

Course assessment
Total number of assessed students: 661

A	B	C	D	E	FX
62.48	10.29	15.73	8.62	1.97	0.91

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

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/CHS/03	**Course name:** Chemistry
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of credits: 0	
Recommended semester/trimester of the course:	
Course level: I.	
Prerequisities: ÚCHV/ACHU/03 and ÚCHV/OCHU/03 and ÚCHV/ANCHU/03 and (ÚCHV/FCHU/03 or ÚCHV/FCHU/10) and ÚCHV/BCHU/03 and ÚCHV/MUSU/03	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment

Total number of assessed students: 175

A	B	C	D	E	FX
22.29	25.14	24.0	17.71	8.57	2.29

Provides:
Date of last modification: 03.02.2014
Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ CAOZ/03	**Course name:** Chemistry of Inorganic & Organic Compounds

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

Number of credits: 5

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities:

Conditions for course completion:
Inorganic part: one test in 6th week; 50 points.
Organic part: one test in 12th week; 50 points.
At least 50% of points is required from both parts.
Terminal examination by written form, 100 points; 50 points from inorganic part and 50 points from organic part.

Learning outcomes:
The main goal of this subject is to provide a general overview of inorganic and organic compound, including special materials, in regard to their properties and applications in the industry.

Brief outline of the course:
The compounds of some metallic and nonmetallic elements. Relationship between structure, properties and application. Natural and synthetic materials, nanomaterials on the basis of inorganic compounds. Overview of the organic compounds including natural and unnatural saccharides, peptides, lipid substances, nucleosides, terpenes and their industrial applications.

Recommended literature:
1. Ondrejovič G. a kol.: Anorganická chémia 2, STU, Bratislava 1995.
2. Shriver D. F., Atkins P. at al.: Inorganic Chemistry. Oxford University Press, Oxford 2006.
3. K. C. Timberlake: Organic and Biological Chemistry, Benjamin Cummings Publishing Company, Inc., 2002.
4. McMurry, J. Organic chemistry, Brooks/Cole, a Thomson Learning Company, 2004.

Course language:

Notes:

Course assessment
Total number of assessed students: 66

A	B	C	D	E	FX
33.33	12.12	21.21	24.24	7.58	1.52

Provides: doc. RNDr. Mária Reháková, CSc., doc. RNDr. Miroslava Martinková, PhD.

Date of last modification: 03.02.2014
Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ACHU/03	**Course name:** Inorganic Chemistry

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 credits: 6

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚCHV/VCHU/10 or ÚCHV/VCHU/14

Conditions for course completion:
Test in the middle and at the end of the semester.
Oral examination.

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. Metals and transition elements. Abudance, properties, reactivity, important compounds.

Recommended literature:
http://kosice.upjs.sk/~vladimir.zelenak/ACHU.htm (ppt slides from the lectures as a support for self study)
Greenwood, N. N., Earnshaw, A: Chemistry of the Elements. Pergamon Press, Oxford, 1984
Atkins O., Overton T., Rourke J., Weller M., Armstrong F.: Inorganic Chemistry, University Press, Oxford, 2006.

Course language:

Notes:

Course assessment
Total number of assessed students: 530

A	B	C	D	E	FX
9.81	17.74	30.19	27.17	10.94	4.15

Provides: doc. RNDr. Vladimír Zeleňák, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ UECH/03	**Course name:** Introduction to 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 credits: 5

Recommended semester/trimester of the course: 3.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Oral examination

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

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

Recommended literature:
1. Gary W. van Loon, Stephen J. Duffy : Environmental Chemistry - A Global Perspective, Oxford University Press, Oxford 2003
2. R.A. Bailey, H.M. Clark, J.P. Ferris, S. Krause, R.L. Strong : Chemistry of the Environment, Academic Press, San Diego 2002
3. G. Schwedt: The Essential Guide to Environmental Chemistry, Wiley and Sons, London 2001
4. R.N. Reeve, J.D. Barnes: General Environmental Chemistry, Wiley, London 1994
5. G. Burton, J. Holman, G. Pilling, D. Waddington: Chemical Storylines, Heinemann, Oxford, London 1994
6. www

Course language:

Notes:

Course assessment
Total number of assessed students: 189

A	B	C	D	E	FX
48.15	19.05	16.93	9.52	5.82	0.53

Provides: RNDr. Andrea Straková Fedorková, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, 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 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: 393

A	B	C	D	E	FX
9.67	10.43	18.07	19.85	26.21	15.78

Provides: doc. RNDr. Roman Soták, PhD., RNDr. Jana Borzová, Mgr. Timea Gábová, RNDr. Eva Oceľáková

Date of last modification: 14.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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 credits: 6

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚCHV/VCHU/15 or ÚCHV/VCHU/14 or ÚCHV/VCHU/10 or ÚCHV/VACH/10

Conditions for course completion:
Two tests at lecture in 7 and 14th week. Test max 50 points. At least 25 points required.
Written exam, 100 points. At least 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:
Basic organic chemistry course.

Brief outline of the course:
Chemical bonding Hybridization and Bonding Covalent bonds Double bonds and Triple Bonds Structural Formulas of Organic Molecules Polar Covalent Bonds and Electronegativity Constitutional Isomers Alkenes Electrophilic Additions Strong Brønsted Acids Lewis Acids (non-Proton Electrophiles) Electrophilic Halogen Reagents Other Electrophilic Reagents Reduction Oxidation Radical Additions Allylic Substitution Alkynes Addition Reactions Hydrogenation Electrophiles Hydration & Tautomerism Hydroboration Nucleophilile Addition & Reduction Acidity of Terminal Alkynes (Substitution of H) Alkyl Halides General Reactivity Substitution(of X) SN2 Mechanism SN1 Mechanism Elimination (of HX) Summary of 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

Recommended literature:
1. on-line ppt presentation in MOODLE, moodle science.upjs.sk
2. Organic Chemistry, Clayden, Greeves Warren & Wothers, Oxford University Press, 2010
3. Organic Chemistry, Solomon, Willey, 2009

Course language:

Notes:

Course assessment
Total number of assessed students: 556

A	B	C	D	E	FX
3.6	8.27	14.75	20.86	47.84	4.68

Provides: prof. RNDr. Jozef Gonda, DrSc., RNDr. Slávka Hamuľaková, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of credits: 5

Recommended semester/trimester of the course: 3.

Course level: I.

Prerequisities: ÚCHV/OCHU/03

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.
Grades: A: 91-100b, B: 81-90b, C: 71-80b, D: 61-70b, E: 51-60b, Fx: 0-50b.
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:

Notes:

Course assessment
Total number of assessed students: 282

A	B	C	D	E	FX
33.33	26.95	21.99	12.06	5.67	0.0

Provides: RNDr. Jana Špaková Raschmanová, PhD., RNDr. Dávid Maliňák, PhD., RNDr. Slávka Hamuľaková, PhD., RNDr. Martin Walko, PhD., RNDr. Zuzana Kudličková, PhD., RNDr. Mária Vilková, PhD., RNDr. Ladislav Janovec, PhD., RNDr. Ján Elečko

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/FCHU/10	**Course name:** Physical Chemistry

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 credits: 6

Recommended semester/trimester of the course: 4.

Course level: I.

Prerequisities: ÚCHV/VCHU/14 or ÚCHV/VCHU/10 or ÚCHV/VACH/10

Conditions for course completion:
Written test
Examination

Learning outcomes:
To provide the students with basic knowledge of physical chemistry.

Brief outline of the course:
Fundamental concepts of thermodynamics, thermochemistry, chemical equilibrium, phase equilibria and diagrams, laws for ideal gas and reals gases, liquids, solutions, solutions of electrolytes. Electrochemistry: ionics and electrodics. Electrodes and electrochemical cells, corrosion. Chemical kinetics, catalysis. Adsorption.

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, 1996
W.J. Moore: Physical Chemistry, Longman, London 1972 and newer editions

Course language:

Notes:

Course assessment
Total number of assessed students: 131

A	B	C	D	E	FX
29.77	15.27	13.74	18.32	16.79	6.11

Provides: RNDr. Andrea Morovská Turoňová, PhD., Mgr. Ján Macko

Date of last modification: 11.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ FPCh/08	**Course name:** Physics 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 credits: 6

Recommended semester/trimester of the course: 1.

Course level: I.

Prerequisities:

Conditions for course completion:
Test-papers (2).
Exam.

Learning outcomes:
Completing the course students will get knowledge of fundamental physical laws and will understand their relation to chemistry.

Brief outline of the course:
Kinematics and dynamics of mass point, rigid bodies and fluids. Structure and properties of materia. The kinetic theory of gases and the foundations of thermodynamics. Structure and properties of liquids. Mechanical properties of solids, Hooke's Law. Stationary el. field and constant electric current. Magnetic field. Optics.

Recommended literature:
1. V. Hajko, J. Daniel-Szabó: Základy fyziky. Veda, Bratislava, 1980.
2. Š. Veis, J. Maďar, V. Martišovič: Všeobecná fyzika 1, Mechanika a molekulová fyzika. Alfa, Bratislava, 1978.
3. P. Čičmanec: Všeobecná fyzika 2, Elektrina a magnetizmus. Alfa, Bratislava, 1980.
4. R.P. Feynman, R.B. Leighton, M. Sands: Feynmanove prednášky z fyziky 1-5. Alfa, Bratislava, 1985.
5. V. Hajko a kol.: Fyzika v príkladoch. Alfa, Bratislava, 1983.

Course language:
Slovak language.

Notes:

Course assessment
Total number of assessed students: 346

A	B	C	D	E	FX
18.79	26.59	29.48	15.03	9.83	0.29

Provides: Mgr. Gregor Bánó, PhD., RNDr. Zuzana Jurašeková, PhD.

Date of last modification: 10.02.2014
Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ADP/03	**Course name:** Porous materials and their applications

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

Number of credits: 5

Recommended semester/trimester of the course: 6.

Course level: I., II., III.

Prerequisities:

Conditions for course completion:
Written test in the middle and the end of the semester.

Learning outcomes:
To make the acquaintance of various types of advanced porous solids and basic methods for their investigation. To gen up the students with the methods used in characterisation of specific surface area and pore size of different types of porous materials.

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

Recommended literature:
1. F. Rouquerol, J. Rouquerol, K. Sing: Adsorption by powders and porous solids, Academic press, London, UK, 1999
2. S. J. Gregg, K.S.W. Sing: Adsorption, surface area and porosity, Academic Press, London,, UK, 1982.
3. V. Zeleňák: Adsorption and porosity of solid substances, internal study text, PF UPJŠ, 2007.

Course language:

Notes:

Course assessment
Total number of assessed students: 49

A	B	C	D	E	FX	N	P
81.63	10.2	4.08	0.0	0.0	0.0	0.0	4.08

Provides: doc. RNDr. Vladimír Zeleňák, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of credits: 4

Recommended semester/trimester of the course: 2.

Course level: I.

Prerequisities: ÚCHV/VCHU/14 or ÚCHV/VCHU/15 or ÚCHV/VCHU/10 or ÚCHV/VACH/10

Conditions for course completion:

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

Recommended literature:
Z. Vargová, J. Kuchár: Praktikum z anorganickej chémie, Košice, 2008
M. Reháková, M. Dzurillová, V. Zeleňák, V. Urvichiarová: Laboratórna technika, PF UPJŠ, Košice, 1999

Course language:

Notes:

Course assessment
Total number of assessed students: 337

A	B	C	D	E	FX
44.81	28.49	18.99	3.26	2.97	1.48

Provides: RNDr. Juraj Kuchár, PhD., RNDr. Lukáš Smolko, Mgr. Romana Smolková, RNDr. Martin Vavra, PhD., Mgr. Veronika Farkasová

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of credits: 4

Recommended semester/trimester of the course: 5.

Course level: I., II.

Prerequisities:

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: 211

A	B	C	D	E	FX
68.25	23.7	7.11	0.95	0.0	0.0

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

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, 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 credits: 5	
Recommended semester/trimester of the course: 6.	
Course level: I.	
Prerequisities: (ÚCHV/ANCHU/03 or ÚCHV/ANCHE/09 or ÚCHV/ANCH1b/03) and (ÚCHV/PAEC/03 or ÚCHV/PANCH/06 or ÚCHV/PANCHE/09 or ÚCHV/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: 392

A	B	C	D	E	FX
28.32	25.51	25.0	11.99	6.38	2.81

Provides: doc. RNDr. Taťána Gondová, CSc.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of credits: 8

Recommended semester/trimester of the course: 6.

Course level: I.

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

Conditions for course completion:

Learning outcomes:

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

Recommended literature:
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: 231

A	B	C	D	E	FX
20.35	26.41	30.3	17.75	5.19	0.0

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

Date of last modification: 03.02.2014

Approved: doc. RNDr. Stanislav Krajči, PhD., doc. RNDr. Vladimír Zeleňák, PhD.