COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ZEM1/04	**Course name:** Basic experimental apparatus methods

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: 1., 3.

Course level: 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: 2

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

Provides: prof. RNDr. Katarína Györyová, DrSc., prof. RNDr. Juraj Černák, CSc., doc. RNDr. Mária Reháková, CSc., doc. RNDr. Vladimír Zeleňák, PhD., doc. RNDr. Ivan Potočňák, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ZTOX/04	**Course name:** Basic Toxicology

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

Number of credits: 5

Recommended semester/trimester of the course: 1.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:
Goal of the course is to provide the students with a knowledge of types of toxic substances and their metabolism, safe and handling of toxic substances.

Brief outline of the course:
Historical aspects, types of toxic substances, types of exposure, dose-response relationship. Disposition of toxic compounds (absorption, distribution, excretion of toxic compounds). Metabolism of toxic compounds. Drugs as toxic substances, food additives and contaminants, environmental pollutans. Statement of chemistry laboratory policy. Safe and handling of toxic substances.

Recommended literature:
G. F. Fuhrman: Allgemeine Toxikologie fuer Chemiker, Teubner Verlag, Stutgart 1984.
V. E. Forbes, T. L. Forbe: Ecotoxicology in Theory and Practice, Chapman&Hall, London 1994.
J. A. Timbrell: Introduction to Toxicology, Taylor&Francis, London 1994.

Course language:

Notes:

Course assessment
Total number of assessed students: 250

A	B	C	D	E	FX
21.2	26.8	24.0	18.0	8.8	1.2

Provides: prof. RNDr. Katarína Györyová, DrSc.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BTC/03	**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 credits: 5

Recommended semester/trimester of the course: 2.

Course level: II.

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:
Classification of biotechnology, disciplines and subjects which are involved with biotechnology. The fermentation processes, types of bioreactors, impellers, principles of microbial growth, media and substrates for fermentation processes. The bioremediation, production and application of biogas, in-vessel composting. Micro-organisms used to preparation amino acids, their fermentation preparation, isolation and possible uses. The methods of classical Plant Biotechnology. Ethanol fermentation, spirits, production of wine and beer. The biological filters, nutrient removal and the membrane bioreactors. Antibiotics.

Recommended literature:
E.M.T. El-Mansi et al. ,Fermentation microbiology ang 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: 84

A	B	C	D	E	FX
42.86	23.81	19.05	8.33	5.95	0.0

Provides: RNDr. Danica Sabolová, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/MPPb/03	**Course name:** Continual pedagogic practice I

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

Number of credits: 1

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities: ÚCHV/SPC1a/03

Conditions for course completion:

Learning outcomes:
The aim of this subject is to apply theoretical preparation from chemistry didactics by the creation of lesson plans for teaching

Brief outline of the course:
The practice runs 3 week and is realizes only in one school in Košice from both certificated subjects. Content of practise is obligate visitation at 8 lessons and unlearns minimal 10 lessons from each certificated subject. A part of practice is methodical and professional analysis unlearn lesson and active implication in out of class and school activities.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 158

abs	n
100.0	0.0

Provides: doc. RNDr. Mária Ganajová, CSc., RNDr. Milena Kristofová

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/MPPc/04	**Course name:** Continual pedagogic practice II

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

Number of credits: 2

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities: ÚCHV/MPPb/03 and ÚCHV/DCHa/03

Conditions for course completion:

Learning outcomes:
The aim of this subject is to apply theoretical preparation from chemistry didactics by the creation of lesson plans for teaching

Brief outline of the course:
The practice runs 4 week and is realizes only in one school in Košice from both certificated subjects. Content of practise is obligate visitation at 8 lessons and unlearns minimal 18 lessons from each certificated subject. A part of practice is methodical and professional analysis unlearn lesson and active implication in out of class and school activities.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 138

abs	n
100.0	0.0

Provides: doc. RNDr. Mária Ganajová, CSc., RNDr. Milena Kristofová, RNDr. Ivana Sotáková

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/MPPd/05	**Course name:** Continual pedagogic practise III

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

Number of credits: 2

Recommended semester/trimester of the course: 4.

Course level: II.

Prerequisities: (ÚCHV/MPPc/04 or ÚCHV/MPPc/15) and ÚCHV/DCH2/15

Conditions for course completion:

Learning outcomes:
The aim of this subject is to apply theoretical preparation from chemistry didactics by the creation of lesson plans for teaching

Brief outline of the course:
The practice runs 3 week and is realizes only in one school in Košice from both certificated subjects. Content of practise is obligate visitation at 4 lessons and unlearns minimal 15 lessons from each certificated subject. A part of practice is methodical and professional analysis unlearn lesson and active implication in out of class and school activities.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 150

abs	n
100.0	0.0

Provides: doc. RNDr. Mária Ganajová, CSc., RNDr. Milena Kristofová, RNDr. Ivana Sotáková

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ KC/03	**Course name:** Cosmetic 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: 3.	
Course level: II.	
Prerequisities:	
Conditions for course completion: Seminar report on the selected subjects of cosmetic chemistry and its oral presentation connected with discussion. Terminal examination by oral form.	
Learning outcomes: The basic chemical ingredients in cosmetic products, their isolation from natural sources. The construction of some interesting groups of the orgnaic structures and their application in cosmetic industry.	
Brief outline of the course: Skin and its components. The chemistry of lipids. Lipids, their classification (triacylglycerols, glycerophospholipids and sfingophoslipids), liposomes as transport systems. Fatty acids and alcohols, natural and synthetic waxes. Surfactants, their classification. Antioxidants. Dyes, their classification, organic and inorganic dyes, natural and synthetic. Biological active compounds (amino acids, peptides, proteins hydroxy acids, vitamins, polysaccharides) as the cosmetic ingredients. The chemistry of fragrances. Compounds derived from shikimic acid and mevalonic acid, their biosynthesis, Synthetic fragrances and their construction.	
Recommended literature: 1. S. V. Bhat, B. A. Nagasampagi, M. Sivakumar: Chemistry of Natural Products, Springer Narosa 2005, ISBN 81-7319-481-5. 2. G. Ohloff: Scent and Fragrances, Springer-Verlag Berlín Heidelberg 1994, ISBN 3-540-57108-6. 3. D. H. Pybus, CH. S. Sell: The chemistry of fragrances, Royal Society of Chemistry 1999, ISBN 0-8540-528-7. 4. J. McMurry: Organic chemistry, Brooks/Cole, a Thomson Learning Company 2004, Sixth Eddition, ISBN 0534389996.	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 86

A	B	C	D	E	FX
79.07	15.12	4.65	1.16	0.0	0.0

Provides: doc. RNDr. Miroslava Martinková, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ DPP1/14	**Course name:** Diploma Project I
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of credits: 1	
Recommended semester/trimester of the course: 1.	
Course level: 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: 12	

abs	n
100.0	0.0

Provides:
Date of last modification: 17.02.2014
Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ DPP2/14	**Course name:** Diploma Project II
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of credits: 2	
Recommended semester/trimester of the course: 2.	
Course level: 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: 12	

abs	n
100.0	0.0

Provides: doc. Ing. Viera Vojteková, PhD.
Date of last modification: 17.02.2014
Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ DPP3/14	**Course name:** Diploma Project III
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: 3.	
Course level: 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: 15	

abs	n
100.0	0.0

Provides: doc. RNDr. Ivan Potočňák, PhD., doc. Ing. Viera Vojteková, PhD.
Date of last modification: 17.02.2014
Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/DPOU/14	**Course name:** Diploma Thesis and its Defence

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

Number of credits: 15

Recommended semester/trimester of the course:

Course level: II.

Prerequisities: ÚCHV/DPP3/14

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 16

A	B	C	D	E	FX
62.5	31.25	6.25	0.0	0.0	0.0

Provides:

Date of last modification: 17.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ DSU1a/10	**Course name:** Diplomový seminár z chémie pre XCH

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

Number of credits: 2

Recommended semester/trimester of the course: 2.

Course level: II.

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. Mária Ganajová, CSc., RNDr. Milena Kristofová

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ DSU1b/10	**Course name:** Diplomový seminár z chémie pre XCH

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

Number of credits: 2

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 1

abs	n
100.0	0.0

Provides: doc. RNDr. Mária Ganajová, CSc., RNDr. Milena Kristofová

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

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 credits: 5

Recommended semester/trimester of the course: 2.

Course level: 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: 5

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

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

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/CHE2/03	**Course name:** Chemical Excursion

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: Per study period: 1t
Course method: present

Number of credits: 4

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities: ÚCHV/ACHU/03 or ÚCHV/ACH2/03

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 76

A	B	C	D	E	FX
93.42	6.58	0.0	0.0	0.0	0.0

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

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/MSSU1/14	**Course name:** Chemistry and Didactics of Chemistry I

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

Number of credits: 1

Recommended semester/trimester of the course:

Course level: II.

Prerequisities: ÚCHV/VKAU/04 ÚCHV/DCH2/15 and

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 19

A	B	C	D	E	FX
36.84	36.84	21.05	5.26	0.0	0.0

Provides:

Date of last modification: 19.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/MSSU2/14	**Course name:** Chemistry and Didactics of Chemistry II

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

Number of credits: 1

Recommended semester/trimester of the course:

Course level: II.

Prerequisities: ÚCHV/VKOCH/03 and ÚCHV/DCH2/15

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 4

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

Provides:

Date of last modification: 19.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

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: 1.

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. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

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 credits: 5

Recommended semester/trimester of the course: 1., 3.

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: 49

A	B	C	D	E	FX
85.71	12.24	0.0	0.0	0.0	2.04

Provides: doc. RNDr. Renáta Oriňáková, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ USA/03	**Course name:** Introduction to Structure Analysis

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

Number of credits: 5

Recommended semester/trimester of the course: 1.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 1

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

Provides: doc. RNDr. Ivan Potočňák, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/DCHa/03	**Course name:** Methodology of Chemistry Teaching I

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

Number of credits: 3

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities: ÚCHV/SPC1a/03

Conditions for course completion:
Seminar work
Oral examination

Learning outcomes:
The aim of this subject is to apply the pedagogical, psychological and didactic relation of education with connection to theory and praxis. It is meant for education of chemistry on primary and secondary school.

Brief outline of the course:
Methodology of Teaching Chemistry as Science and as object of Teaching. Select, structural, compassion, documentation of curriculum chemistry, concretization of pedagogical-educational aims. View of forms Teaching chemistry, methods of Teaching and means disclosure of curriculum on the concrete subject of curriculum secondary chemistry. Complex summary of use material didactic resources in the academic too contemporary forms Teaching of chemistry. The use of didactic technology in theoretical and experimental Teaching of chemistry. Hobby and out of school activities in chemistry.

Recommended literature:
1. Ganajová, M.: Vybrané kapitoly zo všeobecnej didaktiky chémie, UPJŠ Košice 2009, ISBN 978-80-7097-756-9
2. Ganajová, M., Kalafutová, J.: http://moodle.science.upjs.sk e-kurz: Vybrané kapitoly zo všeobecnej didaktiky chémie pre rok 2008/2009

Course language:

Notes:

Course assessment
Total number of assessed students: 238

A	B	C	D	E	FX
68.07	18.91	6.72	3.78	1.68	0.84

Provides: doc. RNDr. Mária Ganajová, CSc., RNDr. Milena Kristofová

Date of last modification: 03.02.2014
Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/DCHb/03	**Course name:** Methodology of Chemistry Teaching II

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

Number of credits: 5

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities: ÚCHV/DCHa/03

Conditions for course completion:
Seminar work
Oral examination

Learning outcomes:
The aim of this subject is an analysis of a concrete theme and themes of chemistry curriculum meant for secondary school. Students should familiarize with contents, selected teaching methods and possibility of ICT applying in chemistry education

Brief outline of the course:
Didactic of Atomic structure
Didactic of Molecular structure and chemical bonding
Didactic of Chemical action
Didactic of Periodic system of elements
Didactic of Chemical thermodynamics and kinetics
Didactic of Organic chemistry
Didactic of Chemistry of common life

Recommended literature:
1. Pachman E. a kol.: Speciální didaktika chemie. SPN Praha 1986.
2. Smik L. a kol.: Špeciálna didaktika chémie. Učebný text I. a II. UPJŠ 1984.
3. Pfeifer P.: Konkrete Fachdidaktik Chemie Oldenbourg Verlag GmbH. München 1992.
4. The primary and secondary textbook of chemistry
5. Journals: J. Chem. Educ., Chemie in der Schule, Přírodní vědy šk.

Course language:

Notes:

Course assessment
Total number of assessed students: 200

A	B	C	D	E	FX
61.5	21.5	12.5	2.5	2.0	0.0

Provides: doc. RNDr. Mária Ganajová, CSc., RNDr. Milena Kristofová
Date of last modification: 03.02.2014
Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ NTVC/06	**Course name:** New Trends in Chemistry Teaching

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

Number of credits: 5

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
Seminar work
Oral examination

Learning outcomes:
The aim of this subject is to acquaint future teachers of chemistry with brand new trends of education in European Union countries.

Brief outline of the course:
Chemistry of everyday life both at home and abroad, educational texts, chemical experiments, CD-ROMs, Chemistry Nourishes Us, Chemistry of Water, Soil and Air
Chemical experiments of everyday life connected with the themes such as Chemistry Nourishes Us, Cosmetic Chemistry, Acids and Bases of Common Life, Project-based learning in chemistry, Teleprojects in chemistry, Using ICT in the teaching of themes: Chemical experiments of everyday life, Vitamins, Mineral substances and Mineral water

Recommended literature:
1. Ganajová, M. 2005: Chemické experimenty s vybranými produktami z obchodu. UPJŠ v Košiciach, Prírodovedecká fakulta, 110 s. ISBN 80-7097-611-X
2. Obendrauf, V., Becker, R., Ganajová, M., Dunčková, I., Müllerová, V., Kövaryová, E.: Chémia dnes. Košice: Prírodovedecká fakulta UPJŠ, 2001. 80s. ISBN 80-7097-472-9
3. http://kekule.science.upjs.sk

Course language:

Notes:

Course assessment
Total number of assessed students: 74

A	B	C	D	E	FX
93.24	5.41	1.35	0.0	0.0	0.0

Provides: doc. RNDr. Mária Ganajová, CSc., RNDr. Milena Kristofová

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ VKACH/03	**Course name:** Selected Topics in Analytical Chemistry

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

Number of credits: 5

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Classical methods of analytical chemistry - volumetric analysis, gravimetry. Review of analytical instrumental methods. New analytical techniques for characterization and identifications of analytes.

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: 3

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

Provides: doc. RNDr. Taťána Gondová, CSc.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ VKA/04	**Course name:** Selected Topics in Inorganic 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: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:
To make the acquaintance of actual status of research in inorganic chemistry.

Brief outline of the course:
Cu-Zn heterobimetallic compounds: preparation, structure and properties.
Biological and physicochemical properties of some zinc komplex compounds with bioactive ligands.
Pentacoordinated Copper(II) compounds: a trigonal bipyramid or a tetragonal pyramid?
Structure, spectral and thermal properties of cyanoargentates.
Hydrothermal synthesis in inorganic chemistry.
Materials on the basis of inclusion compounds, their structure, properties and application.

Recommended literature:
1. Greenwood, N.N., Earnshaw, A.: Chemistry of the elements I and II, Pergamon Press N.Y., 1993
2. J. E. Huheey, E.A. Keiter, R.L. Keiter: Inorganic Chemistry: Principles of Structure and Reactivity (4th Edition, Addison-Wesley Pub Co, 4th edition,1997

Course language:

Notes:

Course assessment
Total number of assessed students: 197

A	B	C	D	E	FX
41.62	27.41	17.77	8.12	5.08	0.0

Provides: prof. RNDr. Juraj Černák, CSc., prof. RNDr. Katarína Györyová, DrSc., doc. RNDr. Vladimír Zeleňák, PhD., doc. RNDr. Zuzana Vargová, Ph.D., doc. RNDr. Ivan Potočňák, PhD., doc. RNDr. Jozef Chomič, CSc., doc. RNDr. Mária Reháková, CSc., RNDr. Juraj Kuchár, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ VKOCH/03	**Course name:** Selected topics in organic 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: 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: 74

A	B	C	D	E	FX
35.14	17.57	21.62	17.57	8.11	0.0

Provides: doc. RNDr. Ján Imrich, CSc.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ SPC1a/03	**Course name:** Special practising the school experiments I

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: 1.

Course level: II.

Prerequisities:

Conditions for course completion:
Continuous checking of theoretical preparation, development of report and presentation.
Semestral test

Learning outcomes:
The aim of this subject is learn of basic experimental skillfulness in techniques in school experiment with accent on safety and health protections of students at scholar experimental work.

Brief outline of the course:
Selection and arrangement of chemical experiments as the demonstrative experiments, or pupils ´ experiments to themes basic laws of chemistry, determination of constant physicochemical, factors influence speed of chemical reaction, experiments from electrochemistry, creating gases; preparation works characters of quantitative, interesting experiments of everyday life.

Recommended literature:
1. Ganajová, M., Dzurillová, M. 2005: Školské pokusy z chémie I. UPJŠ v Košiciach, Prírodovedecká fakulta, 140 s. ISBN 80-7097-617-9
2. Ganajová, M. 2005: Chemické experimenty s vybranými produktami z obchodu. UPJŠ v Košiciach, Prírodovedecká fakulta, 110 s. ISBN 80-7097-611-X
3. Tomeček,O.: Školská experimentálna semimikrosúprava. Učebné pomôcky Banská Bystrica 1980
4. The primary and secondary textbook of chemistry
5. http://kekule.science.upjs.sk – (ŠIS)

Course language:

Notes:

Course assessment
Total number of assessed students: 181

A	B	C	D	E	FX
61.88	29.83	7.18	1.1	0.0	0.0

Provides: doc. RNDr. Mária Ganajová, CSc., RNDr. Milena Kristofová

Date of last modification: 03.02.2014
Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ SPC1b/03	**Course name:** Special practising the school experiments II

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

Number of credits: 3

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
The knowledge of the reaction mechanism of the main tests of several organic compounds derivatives and the ability of their laboratory realization are required. Written tests: more than 50% from each one is required.

Learning outcomes:
The students will become familiar with the basic laboratory skills and techniques that they can apply in demonstrating experiments in their future career as a teacher. The rules of healthy and safety laboratory work are emphasised.

Brief outline of the course:
Qualitative analysis of organic compounds
Alkanes - preparation of methane
Alkenes preparation and addition reactions of ethene, addition reactionf of β-carotene
Alkynes, Aromatic hydrocarbons and their derivatives – preparation of benzene, aromatic electrophilic substitution reactions – nitration of toluene and naphthalene, preparation of benzyl bromide
Halogenoderivatives – preparation of chloroethane, chloroform, methyl iodide, iodoform
Hydroxoderivatives – properties and reactivity - methanol, ethanol, ethylene glycol, glycerol, preparation of sodium ethanolate and sodium phenoxide, bromation of phenol, colour reactions of phenols, naphtols
Oxoderivatives – diethyl ether – preparation and properties, Aldehydes and Ketones – preparation of formaldehyde, oxidation of formaldehyde, acetone – addition of sodium hydrogensulfite
Carboxylic acids and their derivatives – preparation and properties of soap
Natural compounds – carbohydrates, proteins, amino acids, lipids
Factors that affect the rate of chemical reactions – temperature and concentration
Isolation of the fragrant components using steam distillation

Recommended literature:
1. Smik, L., Merva, L., Brutovská, A: Technika a didaktika školských pokusov, Vyd.Rektorát UPJŠ,Košice,1988
2. Smik, L. a kol.: Špeciálna didaktika chémie II.,Vyd.Rektorát UPJŠ,Košice, 1984
3. Internal scripts -Školské pokusy z organickej chémie

Course language:
slovak

Notes:

Course assessment
Total number of assessed students: 160

A	B	C	D	E	FX
33.75	29.38	20.0	11.88	5.0	0.0

Provides: RNDr. Jana Špaková Raschmanová, PhD., RNDr. Ján Elečko, RNDr. Margaréta Takácsová, RNDr. Kvetoslava Stanková, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/STOX/04	**Course name:** Special Toxicology

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: II.

Prerequisities: ÚCHV/ZTOX/04

Conditions for course completion:

Learning outcomes:
Goal of the course is to provide the students with a knowledge of toxicology of organic and inorganic compounds, drugs, food additives, e.g., safety of substances, designation of substances in accordance of norm of European Union and order of Government of Slovak Republic.

Brief outline of the course:
Goal of the course is to provide the students with a knowledge of toxicology of organic and inorganic compounds, drugs, food additives, e.g., safety of substances, designation of substances in accordance of norm of European Union and order of Government of Slovak Republic.

Recommended literature:
J. A. Timbrell: Introduction to Toxicology, Taylor and Francis, London 1989.
H. Kenneth Dillon, Mat H. Ho: Biological Monitoring of Exposure to
Chemicals: Metals, John Wiley & Sons, New York 1991.
V. E. Forbes, T. L. Forbes: Toxicology in Theory and Practice, Chapmane Hall, London 1994.
H. M. Stahr: Analytical Methods in Toxicology, John Wiley & Sons, New York 1991.

Course language:

Notes:

Course assessment
Total number of assessed students: 192

A	B	C	D	E	FX
50.52	23.96	17.19	6.25	2.08	0.0

Provides: prof. RNDr. Katarína Györyová, DrSc.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/SAZ1/03	**Course name:** Stereochemistry of Inorganic Compounds

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: 1.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
Symmetry, elements of symmetry, point groups, symmetrical properties of orbitals and bonds. Principles of stereochemistry, VSEPR, configuration of molecules, polyhedra, regular and semiregular polyhedra. Valence shells with 4 –12 electron pairs, geometry of molecules and periodic system.

Recommended literature:
Kepert, D. L.: Inorganic Stereochemistry. Springer-Verlag, Berlin, 1982.
Kettle, S. F. A.: Symmetry and Structure. John Wiley & Sons, New York, 1985.

Course language:

Notes:

Course assessment
Total number of assessed students: 41

A	B	C	D	E	FX
58.54	21.95	17.07	0.0	2.44	0.0

Provides: doc. RNDr. Vladimír Zeleňák, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ VKCH/10	**Course name:** Vybrané kapitoly z chémie

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

Number of credits: 4

Recommended semester/trimester of the course: 1.

Course level: II.

Prerequisities:

Conditions for course completion:
Terminal examination by written form.

Learning outcomes:
Organic chemistry:
The general review on the basic chemistry of saccharides, lipids, amino acids and peptides.
Inorganic chemstry:
To get acquaintance of the students with the stereochemistry of inorganic compounds, methods of the study and its influence on the properties of the compounds. Moreover to get acqaintance of the students with actual direction of inorganic chemistry in the area of nanomaterials.

Brief outline of the course:
Organic chemistry:
Nomenclature of monosaccharides, their stereochemistry (the Fischer projection, the Haworth projection, conformation of sugars). Monosaccharide derivatives. Ascending reactions. Oligosaccharides and polysaccharides.
Lipids, their structure and classification. Groups of lipids. Triacylglycerols, glycerophospholipids sfingophospholipids, glycosphingolipids.
Amino acids, their nomenclature, classification and stereochemistry. Synthesis of amino acids. Nonribosomal construction of peptides.
Inorganic chemistry:
Symmetry, elements of symmetry, point groups, symmetrical properties of orbitals and bonds. Principles of stereochemistry, VSEPR, configuration of molecules, polyhedra, regular and semiregular polyhedra, the use of concept of symmetry in IR and UV-VIS spectroscopy. Nanochemistry - definition, bonds in nanoparticles and nanopowders, interactions between nanoparticles. Unique properties of nanomaterials, new methods of the synthesis of nanomaterials.

Recommended literature:
J. McMurry: Organic chemistry, Brooks/Cole, a Thomson Learning Company 2004, Sixth Eddition, ISBN 0534389996.
J. Chomič: Stereochemistry of inorganic compounds, UPJŠ Košice, 1988.
K. J. Klabunde, R. M. Richards: Nanoscale Materials in Chemistry, Wiley-CH, 2009.

Course language:

Notes:

Course assessment
Total number of assessed students: 101

A	B	C	D	E	FX
16.83	20.79	36.63	20.79	3.96	0.99

Provides: doc. RNDr. Mária Kožurková, CSc., doc. RNDr. Vladimír Zeleňák, PhD., doc. RNDr. Miroslava Martinková, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ XBCH/04	**Course name:** Xenobiochemistry

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: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
test

Learning outcomes:
Students obtained modern knowledge of xenobiotics metabolism in living organisms

Brief outline of the course:
Characterization of metabolism of xenobiotics in the liver. The basic types of biotransformation reactions - oxidation, reduction, hydrolysis, conjugation. Biotransformation enzymes. Free radicals and their effects, lipid peroxidation.

Recommended literature:
Z. Ďuračková: Voľné radikály a antioxidanty v medicíne, Slovak akademik press 1998.
Z.Vodrážka : Biochémia, Praha, 1996.
A. Jindra: Biochémia, molekulárnobiologické a farmakologické aspekty, Praha, 1985.

Course language:

Notes:

Course assessment
Total number of assessed students: 32

A	B	C	D	E	FX
59.38	21.88	12.5	3.13	3.13	0.0

Provides: RNDr. Danica Sabolová, PhD.

Date of last modification: 03.02.2014

Approved: doc. RNDr. Mária Ganajová, CSc., doc. RNDr. Stanislav Krajči, PhD., prof. Volodymyr Starosta, DrSc.