COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KFaDF/AFS/05	**Course name:** Ancient Philosophy and Present Times

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

Number of credits: 2

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 31

A	B	C	D	E	FX
80.65	6.45	6.45	0.0	6.45	0.0

Provides: Doc. PhDr. Peter Nezník, CSc.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ AS1/03	**Course name:** Asymmetric synthesis

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:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 116

A	B	C	D	E	FX
75.0	14.66	6.03	2.59	1.72	0.0

Provides: prof. RNDr. Jozef Gonda, DrSc.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ BOC/03	**Course name:** Bioorganic chemistry

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:

Course level: II.

Prerequisities:

Conditions for course completion:
Examinationn

Learning outcomes:
Explanation of fundamental principles for the construction of bioorganic molecular models of biochemical precesses using the tools of organic chemistry.

Brief outline of the course:
1. Introduction: Basic consideration, proximity effects in biochemistry, Molecular adaptation, Molecular recognition at the supramolecular level.
2. Bioorganic Chemistry of amino acids and polypeptides: Chemistry of the living cells, Analogy between organic reactions and biochemical tranformations, Chemistry of the peptide bond, Nonribosomal peptide formation, Asymmetric synthesis od amino acids, Asymmetric synthesis with chiral organometalic catalysts, Transition state analogs, Antibodies as enzymes, Chemical mutations, Molecular recognition and Drug design.
3. Bioorganic Chemistry of the Phosphate groups and polynucleotides: Energy storage, DNA intercalates, RNA molecules as catalysts.
4. Enzyme Chemistry: Introduction to catalysis and enzymes, Multifuntional catalysis and Simple models, alfa-Chymotrypsin, Other hydrolytic enzymes, Strereoelectronic control in hydrolytic reactions, Immobilized enzymes, Enzymes in synthetic organic chemistry, Enzyme-Analog-Built polymers, Design of molecular clefts.
5. Enzyme Models: Host-Guest complexation chemistry, New development in crown ether chemistry, Membrane chemistry and micelles, Polymers, Cyclodextrins, Enzyme design using steroid template, Remote functionalisation reactions, Polyene biomimetic cyclisations.
6. Metal Ions: Metal ions in proteins and biological molecules, Carbopeptidase A, Hydrolysis of amino acid esters and peptides, Iron and oxygen transport, Cooper ion, Cobalt and vitamin B12 action, Oxidoreduction, Pyridoxal phosphate, Biotin.

Recommended literature:
Voet J. : Biochemistry, Springer Verlag, 1998
Dugas H.: Bioorganic Chemistry, Springer Verlag, 1999.

Course language:

Course assessment

Total number of assessed students: 157

A	B	C	D	E	FX
82.8	5.1	7.01	3.82	1.27	0.0

Provides: prof. RNDr. Jozef Gonda, DrSc.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/CHN/09	**Course name:** Chemical nanotechnology

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 2 / 0 **Per study period:** 28 / 0
Course method: present

Number of credits: 4

Recommended semester/trimester of the course: 4.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:
Students will be familiar with modern trends in the area of nanotechnology and role of chemistry in creation and application of nanostructured materials and devices.

Brief outline of the course:
Modern trends in nanotechnology, in particular nanoparticles, nanotubes and fullerenes, conducting and switchable polymers, sensors and biosensors, DNA nanostructures, molecular electornics and photonics.

Recommended literature:
1. Lectures handouts can be found at http://lms.upjs.sk/course/view.php?id=388
2. Steed, J. W.; Turner, D. R. Wallace, K. J. Core concepts in supramolecular chemistry and nanochemistry; John Wiley & sons, Chichester 2007.
3. Rao, C. N. R.; Muller, A.; Cheetham, A. K. Nanomaterials Chemistry; WILEY-VCH Weinheim 2007.

Course language:

Course assessment
Total number of assessed students: 4

abs	n
100.0	0.0

Provides: RNDr. Martin Walko, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ CHOZ/03	**Course name:** Organometallic 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: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Method of assessment and course studies completion: Examination
Continuous assessment (e.g. written test, individual work...): Individual work on seminars, 2 written tests (7th and 14th week)
Final assessment (e.g. exam, thesis...): Written exam consisting of theory and solving the practical synhetic problems

Learning outcomes:
Objectives of the course: To clarify the role of the organometallic compounds chemistry as one of the perspective interdisciplinary field of organic and inorganic chemistry.

Brief outline of the course:
Brief outline of the course: The goal of this subject is to apprise the students of the main characteristics of organometallic compounds - the types of carbon-metal bonds, the structure, chirality and basic methods of preparation of organometallic compounds. The most important groups of organometallic compounds, including metallocenes, are presented in details herein. Many examples of the utilization of organometallic complexes in addition, elimination and substitution reactions are given including many examples of their applications in asymmetric synthesis and in the synthesis of natural products possesing some biological activity.

Recommended literature:
C. Elshenbroich, A. Salzer, Organometallics, VCH Publisheres; 2nd ed 1993
F.A.Carey, R.J. Sundberg, Advanced organic chemistry, Kluwer
Academic Publishers Group, 4th ed 2001
R.H. Crabtree, The Organometallic chemistry of Transition Metals,
John Wiley & Sons, 3rd ed 2000
Š. Toma, R. Šebesta, J. Cvengroš, Chémia a využitie organokovových zlúčenín, OMEGA INFO, Bratislava, 2007
M. Schlosser, Organometallics in Synthesis, 3rd Manual, John Wiley & Sons, 2013

Course language:
slovak and english

Course assessment
Total number of assessed students: 82

A	B	C	D	E	FX
56.1	19.51	10.98	7.32	6.1	0.0
Provides: RNDr. Jana Špaková Raschmanová, PhD.					
Date of last modification: 24.02.2017					
Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.					

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KFaDF/DF2p/03	**Course name:** History of Philosophy 2 (General Introduction)

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

Number of credits: 4

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 734

A	B	C	D	E	FX
60.63	13.9	12.67	8.72	3.41	0.68

Provides: doc. PhDr. Pavol Tholt, PhD., mim. prof., Doc. PhDr. Peter Nezník, CSc., PhDr. Katarína Mayerová, PhD., doc. Mgr. Róbert Stojka, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ FAK1a/07	**Course name:** Pharmacology I
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 2 / 2 **Per study period:** 28 / 28 **Course method:** present	
Number of credits: 4	
Recommended semester/trimester of the course:	
Course level: II.	
Prerequisities: ÚCHV/FMCH/04	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 12	
abs	n
100.0	0.0
Provides: prof. MVDr. Ján Mojžiš, DrSc.	
Date of last modification: 24.02.2017	
Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ FAK1b/07	**Course name:** Pharmacology 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: 6

Recommended semester/trimester of the course:

Course level: II.

Prerequisities: ÚCHV/FAK1a/07

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 9

A	B	C	D	E	FX
0.0	11.11	33.33	11.11	44.44	0.0

Provides: prof. MVDr. Ján Mojžiš, DrSc.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ FMCH/04	**Course name:** Medicinal 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:

Course level: II.

Prerequisities:

Conditions for course completion:
Two tests at seminars, Written exam

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

Brief outline of the course:
Introduction, classification of drugs, factors influencing design and activity of drugs of the third generation, drug chirality, search for new drugs, structure-activity relationships, chemotherapeutics of central, peripheral and vegetative nervous system, antibacterial, antitumor and antiviral compounds, antitussives and expectorants, disinfectants.

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

Course language:
Slovak

Course assessment
Total number of assessed students: 113

A	B	C	D	E	FX
59.29	20.35	14.16	3.54	1.77	0.88

Provides: RNDr. Mariana Budovská, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/HZ1/00	**Course name:** Heterocyclic 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: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Two tests at seminars
Written exam

Learning outcomes:
Goal of the subject is to afford the basic information about occurrence, practical significance, synthesis, chemical and biological properties of heterocyclic compounds.

Brief outline of the course:
Preparation and propertieis of various types of heterocycles. Attention will be paid to aromatic and non-aromatic compounds, including their biological properties and application in organic synthesis. Natural compounds containing heterocycles, biological activity and drugs on the base of heterocycles and their synthesis.

Recommended literature:
1. Gilchrist T.L.: Heterocyclic Chemistry, Longman Harlow 1992.
2. Eichler T., Hauptmann S.: The Chemistry of Heterocycles. Structure, Reactions, Synthesis and Application. Second Edition, WILEY-VCH, Weinheim, 2003.

Course language:
Slovak

Course assessment
Total number of assessed students: 122

A	B	C	D	E	FX
56.56	27.05	11.48	4.1	0.82	0.0

Provides: RNDr. Mariana Budovská, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KFaDF/IH2/03	**Course name:** Idea Humanitas 2 (General Introduction)

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

Number of credits: 2

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 8

A	B	C	D	E	FX
87.5	12.5	0.0	0.0	0.0	0.0

Provides: Doc. PhDr. Peter Nezník, CSc.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, 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:

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:

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: 24.02.2017
Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KFaDF/ KDF/05	**Course name:** Chapters from History of Philosophy of 19th and 20th Centuries (General Introduction)

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

Number of credits: 2

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 10

A	B	C	D	E	FX
50.0	20.0	10.0	0.0	10.0	10.0

Provides: doc. PhDr. Pavol Tholt, PhD., mim. prof.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/KK/07	**Course name:** Communication and Cooperation
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of credits: 2	
Recommended semester/trimester of the course: 3.	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	

Course assessment

Total number of assessed students: 281

abs	n	z
98.22	1.78	0.0

Provides: Mgr. Ondrej Kalina, PhD., Mgr. Lucia Hricová, PhD.
Date of last modification: 16.02.2017
Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ KOC1/01	**Course name:** Quantum 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: 5

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Activity within practice will be evaluated. Two written tests will be realized in 7-th and 14-th week, resp. during the term of the course.
The examination will consist of written and verbal test. Continuous evaluation will be also taken into account.

Learning outcomes:
Students will intensify their knowledge in the field of valence-bond based on molecular orbital theory (MO) and self-reliant perform basic quantum chemical calculations (molecular geometry optimization, transition states, vibrational analysis, etc.).

Brief outline of the course:
Development of valence-bond theory. Time-independent Schrodinger equation. Basic approximations in molecular orbital valence-bond theory. Variant methods of calculation in the framework of molecular orbital valence-bond theory. Chemical reactivity. Potential energy hypersurfaces of molecules. Reaction coordinate. Calculation of the absolute and relative equilibrium and rate constants, resp. in gas phase. Solvatation energy calculation.

Recommended literature:
1. Jensen F.: Introduction to Computational Chemistry, Wiley,2000.
2. Leach A. R.: Molecular Modelling, Addison Wesley Longman Ltd. 1998.
3. Náray-Szabó G., Surján P. R., Ángyán J. G.: Applied Quantum Chemistry, Akadémia Kiadó, Budapest, 1987.

Course language:
slovak language and english language

Course assessment
Total number of assessed students: 27

A	B	C	D	E	FX
81.48	14.81	3.7	0.0	0.0	0.0

Provides: RNDr. Ladislav Janovec, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/KOR1/00

Course name: Organic reaction kinetics

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

Number of credits: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Work at seminars. Homeworks: Calculations of kinetic and thermodynamic parameters of model reactions.
Terminal examination consists of responding 3 themes and 3 exercises connecting thus the theoretical knowledge with praktical solutions of problems.

Learning outcomes:
Adopting of principles and methodology of the kinetics of organic reactions and their utilization for kinetic measurements of main types of chemical reactions. Learning of measurements and calculations of the basic kinetic and thermodynamic parameters using examples from real chemical experiments and the use of these data for determination of the mechanisms of the organic reactions.

Brief outline of the course:
The importance of kinetics and mechanisms of organic reactions. Rate constants and kinetic equations. Methods used at measuring of the reaction rates. Particular steps of determination of kinetic equations and rate constants. Main stages at solving of kinetic problems. Effects of reaction conditions on the reaction rate. Determination of the kinetic equation and rate constants. Reactions, kinetic equations, and rate constants of the first, pseudo-first, and second order. Reversible reactions. Parallel reactions. Consecutive reactions. Activation energy and entropy. Acido-basic catalysis. Isotopic effects. Influence of the medium on the chemical reactions. Linear free-energy relationships.

Recommended literature:

Course language:

Notes:
Advanced knowledge of the EXCEL use is necessary.

Course assessment
Total number of assessed students: 9

A	B	C	D	E	FX
55.56	11.11	33.33	0.0	0.0	0.0

Provides: doc. RNDr. Ján Imrich, CSc.
Date of last modification: 24.02.2017
Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ KP/12	**Course name:** Survival Course
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 36s **Course method:** present	
Number of credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 329	

abs	n
47.11	52.89

Provides: MUDr. Peter Dombrovský, Mgr. Marek Valanský	
Date of last modification: 23.02.2017	
Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ LKSp/13	**Course name:** Summer Course-Rafting of TISA River
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 36s **Course method:** present	
Number of credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 126	

abs	n
45.24	54.76

Provides: Mgr. Peter Bakalár, PhD.
Date of last modification: 23.02.2017
Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ MM1/00	**Course name:** Molecular modeling

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

Number of credits: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Verbal examination and the seminar project

Learning outcomes:
Basic skills and theory necessary for the realisation of the computational experiments in chemistry using specialized software packages. Students will be able to perform theoretical studies of the structure and electronic properties of the smalll and middle-sized molecules and study the thermodynamical and structural aspects of the chemical reactions.

Brief outline of the course:
Building and visualization of chemical structures. Structure optimization and calculation of minimum energy structure. Theoretical studies of reaction mechanisms and chemical reactions. Methods in molecular mechanics and semi-empirical methods. Ab initio and DFT methods. Basic principles and use of molecular dynamics. Conformational analysis.

Recommended literature:
1. LEACH, Andrew R.: Molecular Modelling: Principles and Applications.
2. JENSEN, Frank: An Introduction to Computational Chemistry.
3. Manuals for MOPAC, HYPERCHEM, GAMESS, GAUSSIAN.

Course language:
slovak language and english language

Course assessment
Total number of assessed students: 54

A	B	C	D	E	FX
74.07	25.93	0.0	0.0	0.0	0.0

Provides: RNDr. Ladislav Janovec, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ MSM1/00	**Course name:** Modern synthetic methods

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:

Course level: II.

Prerequisities:

Conditions for course completion:
Seminar written discussion. Terminal examination by written form.

Learning outcomes:
Understanding of modern methods in the synthesis of organic compounds.

Brief outline of the course:
Its purpose is to convey knowledge about concepts, methods, starting materials, and target molecules that play important roles in modern organic synthesis. The concept of synthons, retrosynthetic analysis of simple organic molecules, asymmetric synthesis, nucleophilic addition, oxidation, reduction, protection of functional groups.

Recommended literature:
1. T. W. Green, P. G. M. Wuts: Protective groups in organic synheis, third edition, John Wiley and Sons, Inc. 1999, ISBN: 0-471-22057-4.
2. B. M. Trost, I. Fleming I.: Comprehensive organic synthesis, Eds. Vol. 1-9. Pergamon Press, Oxford 1991.
3. B. Carruthers, I. Coldham: Modern methods of organic synthesism 4th edition, Cambridge University Press 2004, UK, ISBN: 0-521-77097-1.
4. G. S. Zweifel, M. H. Nantz: Modern Organic Synthesis, W. H. Freeman and Company 2007, NY, ISBN: 0-7167-7266-3.
5. J. Fuhrhop, G. Penzlin: Organic synthesis, VCH Weinheim, 1994.

Course language:

Course assessment
Total number of assessed students: 118

A	B	C	D	E	FX
55.93	21.19	13.56	8.47	0.85	0.0

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

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/NCH1/00	**Course name:** Neurochemistry

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

Number of credits: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 24

A	B	C	D	E	FX
66.67	20.83	8.33	4.17	0.0	0.0

Provides: doc. RNDr. Miroslava Martinková, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ NMR1/00	**Course name:** 1D & 2D NMR Spectroscopy

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

Number of credits: 6

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Active student´s work at seminars and individual homework, written examinations in 7th and 14th semestral week.
Terminal examination in written form (4 exercises from combined applications of 1D a 2D NMR and other spectral methods) and oral form (3 themes) joining theoretical knowledge with a practical solution of selected NMR problems and exercises.

Learning outcomes:
Students will learn how to analyze structure and properties of organic, inorganic and biomolecular compounds by 1D and 2D proton and carbon NMR spectra, quantitative NMR analysis, and practical applications in various fields of science and technology.

Brief outline of the course:
Theoretical principles of nuclear magnetic resonance (NMR), basic NMR pulse techniques and Fourier transformation, NMR spectrometers, description of NMR by vector models. Parameters of one- (1D) and two-dimensional (2D) NMR spectra, practical application of 1H and 13C NMR spectra and basic correlated 2D spectra for structure and stereochemical arrangement, elucidation of reaction mechanisms, molecular dynamics, physico-chemical properties and quantitative analysis of chemical compounds.

Recommended literature:
1. Friebolin H.: Basic One- and Two-Dimensional NMR Spectrocopy, 5. Ed., Wiley, 2010.
2. T. D. W. Claridge: High-Resolution NMR Techniques in Organic Chemistry, Elsevier, 1999.
3. Atta-ur-Rahman, M. I. Choudhary: Solving Problems with NMR spectroscopy, Academic Press 1996.
4. H.-O. Kalinowski, S. Berger, S. Braun: Carbon-13 NMR Spectroscopy. Wiley, New York 1988.
5. A. E. Derome: Modern NMR Techniques for Chemistry Research. Pergamon Press, Oxford 1987.
6. E. Pretsch, B. Buhlmann, C. Affolter: Structure Determination of Organic Compounds. Tables of Spectral Data. Springer Verlag, Berlin 2000.
7. E. Breitmaier: Structure Elucidation by NMR in Organic Chemistry: A Practical Guide, 3rd Ed., Wiley, 2002.
8. E. Breitmaier, W. Voelter: Carbon-13 NMR Spectroscopy. VCH Weinheim, 1990.

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

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/NMRP/14	**Course name:** NMR praktikum

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: 6

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 37

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

Provides: RNDr. Mária Vilková, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ OCHST/15	**Course name:** Organic chemistry
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of credits: 4	
Recommended semester/trimester of the course:	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course: Reaction Mechanisms, Mechanisms of Organic Reactions Reactive Intermediates Ionic Reactions Radical Reactions Bond Energy Reaction Energetics Activation Energy Reaction Rates and Kinetics Thermodynamic and Chemical Stability Aromaticity Benzene and Other Aromatic Compounds Fused Benzene Ring Compounds Other Aromatic Systems Factors Required for Aromaticity Stereoisomers Chirality and Symmetry Enantiomorphism Polarimetry Optical Activity Designating the Configuration of Stereogenic Centers The Sequence Rule for Assignment of Configurations to Stereogenic Carbons Compounds Having Two or More Stereogenic Centers Stereogenic Nitrogen Fischer Projection Formulas Alkenes Electrophilic Additions Strong Brønsted Acids Lewis Acids (non-Proton Electrophiles) Electrophilic Halogen Reagents Other Electrophilic Reagents Reduction Oxidation Radical Additions Allylic Substitution Alkynes Addition Reactions Hydrogenation Electrophiles Hydration & Tautomerism Hydroboration Nucleophilile Addition & Reduction Acidity of Terminal Alkynes (Substitution of H) Alkyl Halides General Reactivity Substitution(of X) SN2 Mechanism SN1 Mechanism Elimination (of HX) Summary of Substiution vs. Elimination Substitution by Metals Elimination Reactions of Dihalides Alcohols Reactions of Alcohols Substitution of the Hydroxyl H Substitution of the Hydroxyl Group Elimination of Water Oxidation of Alcohols Reactions of Phenols Acidity of Phenols Ring Substitution of Phenols Oxidation to Quinones Aromatic compounds Electrophilic Substitution A Substitution Mechanism Reactions of Substituted Benzenes Reaction Characteristics Reactions of Disubstituted Rings Reactions of Substituent Groups Nucleophilic Substitution, Elimination & Addition Reactions Amines Basicity of Nitrogen Compounds Acidity of Nitrogen Compounds Important Reagent Bases Reactions of Amines Electrophilic Substitution at Nitrogen Preparation of 1°-Amines Preparation of 2° & 3°-Amines Reactions with Nitrous Acid Reactions of Aryl Diazonium Intermediates Elimination Reactions of Amines Oxidation States of Nitrogen Basic information: Aldehydes & Ketones Carboxylic Acids Carboxylic Derivatives Natural products, Saccharides, Aminoacids, Biologically active compounds Aldehydes & Ketones Natural Products Synthetic Preparation Properties of Aldehydes & Ketones Reversible Addition Reactions Hydration & Hemiacetal Formation Acetal Formation Imine Formation Enamine Formation Cyanohydrin Formation Irreversible Addition Reactions Complex Metal Hydrides Organometallic Reagents	

Carbonyl Group Modification Wolff-Kishner Reduction Clemmensen Reduction Hydrogenolysis of Thioacetals Oxidations Reactions at the a-Carbon Mechanism of Electrophilic a-Substitution The Aldol Reaction Ambident Enolate Anions Alkylation of Enolate Anions Carboxylic Acids Natural Products Related Derivatives Physical Properties Preparation of Carboxylic Acids Reactions of Carboxylic Acids Salt Formation Substitution of Hydroxyl Hydrogen Substitution of the Hydroxyl Group Reduction & Oxidation Carboxylic Derivatives Reactions of Carboxylic Acid Derivatives Acyl Group Substitution Mechanism Reduction Catalytic Reduction Metal Hydride Reduction Diborane Reduction Reaction with Organometallic Reagents Reactions at the a Carbon Acidity of a C-H The Claisen Condensation Synthesis Applications Carbohydrates Glucose The Structure and Configuration of Glucose Anomeric Forms of Monosaccharides Glycosides Disaccharides Polysaccharides Lipids Fatty Acids Soaps & Detergents Fats & Oils Waxes Phospholipids Prostaglandins Terpenes Proteins and Amino Acids a-Amino Acids Reactions of Amino Acids Synthesis of Amino Acids Peptides & Proteins The Primary Structure of Peptides Secondary & Tertiary Structure of Large Peptides and Proteins Peptide Synthesis Nucleic Acids The Primary Structure of DNA The Secondary & Tertiary Structures of DNA RNA and Protein Synthesis

Recommended literature:

Course language:

Course assessment

Total number of assessed students: 37

A	B	C	D	E	FX
64.86	27.03	5.41	0.0	2.7	0.0

Provides:

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ODPFC/01	**Course name:** Defence of Diploma Thesis

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

Number of credits: 20

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 24

A	B	C	D	E	FX
95.83	0.0	4.17	0.0	0.0	0.0

Provides:

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/OS/03	**Course name:** Organic synthesis

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:

Course level: II.

Prerequisities:

Conditions for course completion:
Midterm exam.
Presentation of a multistep synthesis.
Final written exam.

Learning outcomes:
The aim is to become familiar with the most important methods for the synthesis of organic compounds, their combination and application in the synthesis of complex molecules.

Brief outline of the course:
Retrosynthetic analysis of organic compounds and synthesis planning. Building of a carbon backbone using organometallic compounds and enolates. Reactions resulting in creation of multiple bonds. Synthesis of cyclic molecules. Functional group manipulation using oxidations, reductions and substitutions. Protecting groups and special synthetic techniques. Synthesis of complex molecules and natural products.

Recommended literature:
1. Lecture handouts and seminar exercises can be found at http://lms.upjs.sk/course/view.php?id=386
2. Carruthers W., Coldham I.: Modern Methods of Organic Synthesis, Fourth Edition, Cambridge University Press, 2005..
3. Hanson, J. R.: Organic Synthetic Methods, The Royal Society of Chemistry 2002.

Course language:

Course assessment
Total number of assessed students: 149

A	B	C	D	E	FX
51.68	30.2	12.75	2.68	2.68	0.0

Provides: prof. RNDr. Jozef Gonda, DrSc., RNDr. Ján Elečko, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

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: 3.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:
Students will recieve informations and knowledges about chemical substances in food, their importance and chemical changes in food during processing and storage.

Brief outline of the course:
The main categories of substances in the most important group of food. Aminoacids, proteins, lipids, carbohydrates. Water, minerals, low concentration anorganic compounds, vitamins. Hydrocarbons, colorants, toxic compounds, aditives. Chemical reactions in dairy products.

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 256

A	B	C	D	E	FX
60.55	33.98	5.08	0.0	0.0	0.39

Provides: RNDr. Ján Elečko, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: Dek. PF UPJŠ/PPZ/13	**Course name:** Personality Development and Key Competences for Success on a Labour Market

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

Number of credits: 2

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

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 39

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

Provides: RNDr. Peter Stefányi, PhD.

Date of last modification: 13.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPPaPZ/PPZMg/12	**Course name:** Psychology and Health Psychology (Master´s Study)

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

Number of credits: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 226

A	B	C	D	E	FX
19.47	25.22	25.66	13.27	15.93	0.44

Provides: PhDr. Anna Janovská, PhD., Mgr. Lucia Hricová, PhD.

Date of last modification: 16.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ PRL/04	**Course name:** Chemistry of natural 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: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Seminar report and its presentation by oral form. Terminal examination by written form.

Learning outcomes:
General review on the soma selected groups of natural producst, especially the secondary metabolites (alkakaloids and teprenoids) and their biosynthetic pathways.

Brief outline of the course:
Primary and secondary metabolism. Secondary metabolites an their building blocks. Biosyntheis of shikimic and levalonic acid as intermediates of biosynthesis of building blocks. Chemistry of saccharides, Nomenclature of carbphydrates an its stereochemistry. Monosaccharide derivatives. Oligosaccharides, and polysaccharides. Chemistry of lipids, their classification, sphingolipids, glycosphingolipids, their biosthesis and metabolism. Prostaglandins. Amino acids and peptides. Alkaloids, their classification. Protoalkaloids, tropane alkaloids, inole alkaloids, opiate alkaloids, their biosynthetic pathways. Terpenoids. Biosynthesis of monoterpens, sesquiterpens, diterpens.

Recommended literature:
1.S. V. Bhat, B. A. Nagasampagi, M. Sivakumar: Chemistry of Natural Products, Springer Narosa 2005, ISBN 81-7319-481-5.
2.P. M. Dewick: Medicinal Natural Products, John Wiley and Sons, Ltd. 2002, England, ISBN: 0471496405
3.P. M. Dewick: Medicinal Natural Products: A Bisynthetic Approach, 3rd Edition, John Wiley and Sons, Ltd. 2009, England, ISBN: 978-0-470-74168-9.

Course language:

Course assessment
Total number of assessed students: 107

A	B	C	D	E	FX
61.68	16.82	14.02	4.67	1.87	0.93

Provides: doc. RNDr. Miroslava Martinková, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ROP/15	**Course name:** Ročníkový projekt

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 6 **Per study period:** 84
Course method: present

Number of credits: 6

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Experimental work in physical chemistry laboratory, evaluation of results, discussion, results presentation, seminars and scientific meetings.

Learning outcomes:
Project work and presentation.

Brief outline of the course:
Experimental work in research field for master degree . Evaluation of results and verbal presentation and discussion about.

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 27

abs	n
100.0	0.0

Provides: prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Andrea Morovská Turoňová, PhD., doc. RNDr. Andrea Straková Fedorková, PhD., prof. Mgr. Vasiľ Andruch, DrSc., prof. Dr. Yaroslav Bazeľ, DrSc., doc. Ing. Viera Vojteková, PhD., doc. RNDr. Taťána Gondová, CSc., doc. RNDr. Katarína Reiffová, PhD., doc. RNDr. Miroslava Martinková, PhD., prof. RNDr. Jozef Gonda, DrSc.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ SEM1a/00	**Course name:** Diploma work seminar

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

Number of credits: 2

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 96

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

Provides: RNDr. Ladislav Janovec, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/SEM1b/00	**Course name:** Diploma work seminar

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

Number of credits: 2

Recommended semester/trimester of the course:

Course level: II.

Prerequisities: ÚCHV/SEM1a/00

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 83

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

Provides: RNDr. Ladislav Janovec, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/SEP1/15	**Course name:** Semestrálny projekt 1

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 6 **Per study period:** 84
Course method: present

Number of credits: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Notification any thesis adversed by Department of Physical Chemistry. Semester experimental work with master degree thesis.

Learning outcomes:
Semester scientific thesis.

Brief outline of the course:
Experimental work in research field for master degree . Evaluation of results and verbal presentation and discussion about.

Recommended literature:
Recent journal references.

Course language:

Course assessment
Total number of assessed students: 28

abs	n
100.0	0.0

Provides: prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Andrea Morovská Turoňová, PhD., doc. RNDr. Andrea Straková Fedorková, PhD., doc. RNDr. Miroslava Martinková, PhD., prof. RNDr. Jozef Gonda, DrSc., RNDr. Monika Tvrdoňová, PhD., RNDr. Patrik Olekšák, RNDr. Kvetoslava Stanková, PhD., RNDr. Ján Elečko, PhD., doc. RNDr. Ján Imrich, CSc., RNDr. Mariana Budovská, PhD., RNDr. Martin Walko, PhD., RNDr. Ladislav Janovec, Ph.D., RNDr. Slávka Hamuľaková, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/SEP2/15	**Course name:** Semestrálny projekt 2

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 6 **Per study period:** 84
Course method: present

Number of credits: 6

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Notification any thesis adversed by Department of Physical Chemistry. Semester experimental work with master degree thesis.

Learning outcomes:
Semester scientific thesis.

Brief outline of the course:
Experimental work in research field for master degree . Evaluation of results and verbal presentation and discussion about.

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 26

abs	n
100.0	0.0

Provides: prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Andrea Morovská Turoňová, PhD., doc. RNDr. Andrea Straková Fedorková, PhD., doc. RNDr. Miroslava Martinková, PhD., prof. RNDr. Jozef Gonda, DrSc., RNDr. Monika Tvrdoňová, PhD., RNDr. Kvetoslava Stanková, PhD., RNDr. Ján Elečko, PhD., RNDr. Mariana Budovská, PhD., RNDr. Martin Walko, PhD., RNDr. Slávka Hamuľaková, PhD., RNDr. Ladislav Janovec, Ph.D.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ SMCH/03	**Course name:** Supramolecular 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:

Course level: II.

Prerequisities:

Conditions for course completion:
Presentation of a chosen topic.
Final written exam.

Learning outcomes:

Brief outline of the course:

Recommended literature:
1. Lecture handouts can be found at http://lms.upjs.sk/course/view.php?id=385
2. J.W.Steed and J.L.Atwood, Supramolecular chemistry, Wiley : Chichester, 2000.
3. F.Vogtle, Supramolecular chemistry: an introduction, Wiley : Chichester, 1991.

Course language:

Course assessment
Total number of assessed students: 67

A	B	C	D	E	FX
62.69	22.39	11.94	1.49	1.49	0.0

Provides: RNDr. Martin Walko, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/SPVKE/07	**Course name:** Social-Psychological Training of Coping with Critical Life Situations
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of credits: 2	
Recommended semester/trimester of the course: 2.	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	

Course assessment

Total number of assessed students: 126

abs	n	z
97.62	2.38	0.0

Provides: Mgr. Ondrej Kalina, PhD.
Date of last modification: 16.02.2017
Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ STRE/09	**Course name:** Structure and Reactivity 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: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Tests: in 6th week (50 points) and in 12th week (50 points). At least 50% of points required from both. Terminal examination by written form, 100 points (2 x 50 points).

Learning outcomes:
This module aims to give an understanding of the major principles involved in organic chemistry - covering the fundamentals of bonding, structure and stereochemistry, leading to a description of the types of reaction and reactivity of the various structural types.

Brief outline of the course:
1. Bonding: atomic structure - the chemical bond, the periodic table, valence electrons, Lewis structures, conventions for drawing structures, atomic orbital theory, molecular orbital theory; covalent bonding – bonding in hydrocarbons, bonding in compounds containing heteroatoms, bonding in common functional groups, electronic effects, steric effects.
2. Structure: configuration – geometrical isomerism, optical isomerism, representations of stereoisomers, molecules with one stereogenic centre, molecules with more than one stereogenic centre, asymmetric heteroatoms; conformations – representations of conformers.
3. Reactivity: thermodynamics – Gibbs energy, enthalpy, entropy, chemical equilibrium; kinetics – rates of reaction, activation energy; classes of reaction mechanism – polar, radical, pericyclic, ligand coupling mechanisms, selectivity of reactions, solvents in organic chemistry.
4. Intermediates: carbocations, carbanions, radicals, carbenes, benzynes, ketenes.
5. Acidity a basicity: Lowry-Bronsted acid-base theory, organic acidity, organic basicity.
6. Nucleophilic Substitution: the SN1 reaction, the SN2 reaction, factors affecting reactions.
7. Electrophilic addition reactions, the energy profile of the reaction, the addition of HX to alkenes, Markovnikov's rule, the stereochemistry of electrophilic addition reactions, addition X2 to alkenes, hydration, hydroxymerkuration, hydroboration, addition of carbenes, addition of polyenes, nucleophilic addition reactions, nucleophilic addition to carbonyl compounds, addition water, addition of alcohols, addition of carbanions, the addition of organometallic reagents, addition of amines, conjugated additions, radical addition reactions.
8. Elimination reaction, E1, E2, E1cB, dehydration, dehydrohalogenation, dehalogenation, dehydrogenation.

9. The electrophilic aromatic substitution, halogenation, nitration, sulfonation, Friedel-Crafts alkylation, acylation, towards the impact of multiple groups, nucleophilic aromatic substitution, addition-elimination mechanism, benzynic mechanism, radical substitution of aromatics.
10. Nucleophilic substitution of sp2 carbon, tetrahedral mechanism, addition-elimination mechanism, the elimination-addition mechanism, the types of nucleophilic acyl substitution, nucleophilic acyl substitution of carboxylic acids and their derivatives.
11. Radical reactions, radical substitution, the radical addition, homolytic cleavage of σ-bond photochemical cleavage of π-bonds, one electron oxidation or reduction, cykloaromatiztion.
12. Pericyclic reaction types of pericyclic reactions: electrocyclic reactions, cycloaddition, sigmatropic rearrangements, ene reactions, Woodward-Hoffman rules.
7. Addition reactions
8. Elimination reactions
9. Aromatic substitution
10. Addition-elimination reactions
11. Radical reactions
12. Pericyclic reactions

Recommended literature:

1. Structure and Reactivity in Organic Chemistry, Mark G. Moloney, ISBN: 978-1-4051-1451-6, 318 pages, 2008, Wiley-Blackwell
2. Organic Chemistry: Structure and Reactivity, Seyhan N. Ege, ISBN-10: 0395902231, 1148 pages, 1998, Houghton Mifflin College Div.

Course language:
Slovak language and english language.

Course assessment
Total number of assessed students: 57

A	B	C	D	E	FX
31.58	40.35	19.3	7.02	1.75	0.0

Provides: RNDr. Slávka Hamuľaková, PhD., RNDr. Mária Vilková, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ SVK1/00	**Course name:** Students Scientific Conference (Presentation)
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of credits: 4	
Recommended semester/trimester of the course:	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	

Course assessment

Total number of assessed students: 204

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

Provides:
Date of last modification: 24.02.2017
Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ TOXOL/03	**Course name:** Toxicology of organic compounds

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: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Seminar written report on the selected subjects of toxicology of organic compounds and its oral presentation connected with the discussion. Terminal examination by oral form.

Learning outcomes:
The study of the interaction between chemicals and biological systems in order to quantitively determine the potential for organic compounds to produce the harmful effects in living organisms.

Brief outline of the course:
General principles of toxicology, definition of xenobiotics, toxic effects, ocal and systemic toxicity. Toxicikinetic, absorption, distribution, biotransformation and excretion of xenobiotics and their metaboltes. Biotransformation of xenibiotics. Phase I Reactions (oxidation, reduction, hydrolysis), characterization of enzymes . Phase II reactions, glucuronidation, sulfatation, methylation, acetylation, amino acid conjugation, glutathione konjugation. Toxication versus detoxication, general principles, toxic intermediates and their detoxication. Biotransformation of organic solvents and their toxic effects, toxic efffects of natural products of microorganisms, fungi, plants and some animals. Drug dependence, the general principles and mechanisms.

Recommended literature:
C. D. Laassen: Toxicology: The basic science of poisons, McGraw-Hill Companies, Inc. 2001. ISBN: 0-07-134721-6.

Course language:

Course assessment
Total number of assessed students: 137

A	B	C	D	E	FX
64.23	21.9	8.76	3.65	1.46	0.0

Provides: doc. RNDr. Miroslava Martinková, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚTVŠ/ TVa/11	**Course name:** Sports Activities I.

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

Number of credits: 2

Recommended semester/trimester of the course: 1.

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

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 10457

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
88.25	0.0	0.0	0.0	0.0	0.02	7.81	3.92

Provides: Mgr. Peter Bakalár, PhD., Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, Mgr. Zuzana Küchelová, PhD., PaedDr. Jana Potočníková, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Aurel Zelko, PhD., Mgr. Marcel Čurgali, doc. PhDr. Ivan Šulc, CSc.

Date of last modification: 23.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚTVŠ/ TVb/11	**Course name:** Sports Activities II.

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

Number of credits: 2

Recommended semester/trimester of the course: 2.

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

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 9779

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
85.09	0.61	0.02	0.0	0.0	0.02	10.36	3.9

Provides: Mgr. Peter Bakalár, PhD., Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, Mgr. Zuzana Küchelová, PhD., PaedDr. Jana Potočníková, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Aurel Zelko, PhD., Mgr. Marcel Čurgali, doc. PhDr. Ivan Šulc, CSc.

Date of last modification: 23.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of credits: 2

Recommended semester/trimester of the course: 3.

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

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 6188

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
89.66	0.03	0.0	0.0	0.0	0.0	4.36	5.95

Provides: PaedDr. Jana Potočníková, PhD., Mgr. Marcel Čurgali, Mgr. Peter Bakalár, PhD., Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Aurel Zelko, PhD., doc. PhDr. Ivan Šulc, CSc.

Date of last modification: 23.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of credits: 2

Recommended semester/trimester of the course: 4.

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

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 4644

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
85.66	0.32	0.04	0.0	0.0	0.0	6.61	7.36

Provides: Mgr. Marcel Čurgali, Mgr. Peter Bakalár, PhD., Mgr. Dana Dračková, PhD., Mgr. Agata Horbacz, PhD., Mgr. Dávid Kaško, Mgr. Zuzana Küchelová, PhD., PaedDr. Jana Potočníková, PhD., doc. PaedDr. Ivan Uher, PhD., Mgr. Marek Valanský, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Aurel Zelko, PhD., doc. PhDr. Ivan Šulc, CSc.

Date of last modification: 23.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/UPR/03	**Course name:** The Art of Aiding by Verbal Exchange

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

Number of credits: 2

Recommended semester/trimester of the course: 4.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 49

A	B	C	D	E	FX
85.71	4.08	2.04	2.04	2.04	4.08

Provides: Mgr. Ondrej Kalina, PhD.

Date of last modification: 16.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ USOL/09	**Course name:** Určovanie štruktúry organických zlúčenín

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 0 / 2 **Per study period:** 0 / 28
Course method: present

Number of credits: 3

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Test: 7. and 14. week - structure determination of unknown compounds

Learning outcomes:
The main goal of the subject is to have the ability to solve the complex assignment NMR problems.

Brief outline of the course:
1. 1H and 13C chemical shifts.
2. Through bond effects: Spin-spin coupling - homonuclear experiments (1D and 2D COSY and TOCSY experiments).
3. Through space effects: NOE (1D and 2D NOESY experiments).
4. Heteronuclear correlation experiments - HSQC, HMBC, H2BC.
5. Strategies for assigning resonances to atom within a molecule.
6. Strategies for elucidating unknown molecular structures.
7. FID processing - Mestrec
8. Notation of spectral data for publication.

Recommended literature:

Course language:

Course assessment
Total number of assessed students: 75

abs	n
100.0	0.0

Provides: RNDr. Mária Vilková, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ZCI/04	**Course name:** Basic cheminformatics tools

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: 2

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
3 individual projects

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 representation and use of chemical structure information, computer-aided drug design, 3D visualization and computation, and handling of large volumes of chemical information.

Brief outline of the course:
Representing 2D structures, 2D chemical database applications, Advanced 2D descriptors, Representing 3D structures, 3D visualization & computation, Laboratory information management systems, Electronic laboratory notebooks, Chemical informatics software development,Emerging web service technologies for chemical informatics

Recommended literature:
Johann Gasteiger & Thomas Engel (eds.), Chemoinformatics: A Textbook. Wiley-VCH, Weinheim, 2003
Andrew Leach & Valerie Gillet, An Introduction to Chemoinformatics. Kluwer Academic Publishers, Dordrecht, NL, 2003.

Course language:
slovak language and english language

Course assessment
Total number of assessed students: 0

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

Provides: RNDr. Monika Tvrdoňová, PhD.

Date of last modification: 24.02.2017

Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ ÚTVŠ/CM/13	**Course name:** Seaside Aerobic Exercise
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week: Per study period:** 36s **Course method:** present	
Number of credits: 2	
Recommended semester/trimester of the course:	
Course level: I., II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Course assessment Total number of assessed students: 15	

abs	n
26.67	73.33

Provides: Mgr. Alena Buková, PhD., Mgr. Agata Horbacz, PhD.
Date of last modification: 23.02.2017
Approved: Guaranteeprof. RNDr. Jozef Gonda, DrSc.