

# CONTENT

1. 1D & 2D NMR Spectroscopy.....	2
2. Ancient Philosophy and Present Times.....	4
3. Asymmetric synthesis.....	6
4. Basic cheminformatics tools.....	8
5. Bioorganic Chemistry.....	10
6. Chapters from History of Philosophy of 19th and 20th Centuries (General Introduction).....	11
7. Chemical nanotechnology.....	12
8. Chemistry of Natural Compounds.....	14
9. Class Project.....	16
10. Communication and Cooperation.....	18
11. Cosmetic chemistry.....	20
12. Defence of Diploma Thesis.....	22
13. Diploma work seminar.....	23
14. Diploma work seminar.....	25
15. Food chemistry.....	27
16. Heterocyclic compounds.....	28
17. History of Philosophy 2 (General Introduction).....	30
18. Idea Humanitas 2 (General Introduction).....	32
19. Medicinal Chemistry.....	34
20. Modern synthetic methods.....	36
21. Molecular modeling.....	38
22. NMR praktikum.....	40
23. Neurochemistry.....	42
24. Organic chemistry.....	44
25. Organic reaction kinetics.....	46
26. Organic synthesis.....	48
27. Organometallic Compounds.....	50
28. Pharmacology I.....	52
29. Pharmacology II.....	54
30. Psychology and Health Psychology (Master's Study).....	56
31. Quantum Chemistry.....	58
32. Seaside Aerobic Exercise.....	60
33. Semestral Project 1.....	62
34. Semestral Project 2.....	64
35. Social-Psychological Training of Coping with Critical Life Situations.....	66
36. Sports Activities I.....	67
37. Sports Activities II.....	69
38. Sports Activities III.....	71
39. Sports Activities IV.....	73
40. Structure and Reactivity in Organic Chemistry.....	75
41. Students Scientific Conference (Presentation).....	77
42. Summer Course-Rafting of TISA River.....	78
43. Supramolecular chemistry.....	80
44. Toxicology of Organic Compounds.....	82
45. Určovanie štruktúry organických zlúčenín.....	84

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ NMR1/00	<b>Course name:</b> 1D & 2D NMR Spectroscopy
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 3 <b>Per study period:</b> 28 / 42 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 6	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> <ol style="list-style-type: none"> <li>1. Attendance at lectures and seminars (this also applies to the online form of teaching)</li> <li>2. Activity at seminars (also applies to the online form of teaching) - theoretical preparation of students for all seminars is required</li> <li>3. Elaboration of written assignments (20% of the total evaluation) according to the teacher's instructions.</li> <li>4. Passing the final test (30% of the total evaluation).</li> <li>5. Exam (written 25% and oral part 25%).</li> </ol>	
<b>Learning outcomes:</b> The aim of the course is to get acquainted with 1D and 2D NMR methods and the application of the acquired knowledge in solving NMR problems.	
<b>Brief outline of the course:</b> <ol style="list-style-type: none"> <li>1. Advanced 1D NMR methods               <ol style="list-style-type: none"> <li>a) <sup>13</sup>C NMR experiments – APT, DEPT</li> <li>b) NOE experiments</li> <li>c) Selective experiments</li> </ol> </li> <li>2. 2D NMR methods               <ol style="list-style-type: none"> <li>a) Proton-proton correlation through coupling – COSY, TOCSY</li> <li>b) Proton-proton correlation through space - NOESY</li> <li>c) Proton-carbon correlation – HSQC/HMQC/HETCOR, HMBC, H2BC, EXSIDE</li> <li>d) Carbon-carbon correlation - INADEQUATE</li> </ol> </li> </ol>	
<b>Recommended literature:</b> <ol style="list-style-type: none"> <li>1. H. Friebolin: Basic One- and Two-Dimensional NMR Spectroscopy, 5. Ed., Wiley, 2010.</li> <li>2. T. D. W. Claridge: High-Resolution NMR Techniques in Organic Chemistry, 5. Ed., Elsevier, 2016.</li> <li>3. Atta-ur-Rahman, M. I. Choudhary: Solving Problems with NMR spectroscopy, Academic Press 1996.</li> </ol>	
<b>Course language:</b> english	

**Notes:**

Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.

**Course assessment**

Total number of assessed students: 190

A	B	C	D	E	FX
39.47	25.79	24.21	8.95	1.58	0.0

**Provides:** doc. RNDr. Ján Imrich, CSc.

**Date of last modification:** 28.01.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice					
<b>Faculty:</b> Faculty of Science					
<b>Course ID:</b> KF/AFS/05		<b>Course name:</b> Ancient Philosophy and Present Times			
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present					
<b>Number of ECTS credits:</b> 2					
<b>Recommended semester/trimester of the course:</b> 2.					
<b>Course level:</b> II.					
<b>Prerequisites:</b>					
<b>Conditions for course completion:</b> When implementing the subject in the classical - face-to-face - form of teaching: 40% - continuous assessment of student activity at seminars, partial seminar work - assignment. 60% - final test, or seminar paper in the range of 10 A4 standard pages (with compliance with the KF citation standard for seminar and qualification papers. In the case of a transition to distance education, students will be assigned sub-tasks for studying philosophical texts and processing the task in written form, which must be submitted by the set deadline, will be assigned points (partial assessment) and at the end will prepare a seminar paper to the same extent as in the face-to-face form teaching.					
<b>Learning outcomes:</b>					
<b>Brief outline of the course:</b> Point out the roots of Western civilization that go back to the Greeks. The ancient Greeks, as one of the 3 pillars of European culture, reveal the origins of democracy and critical thinking. Emphasizing the interconnectedness of ancient philosophy and EPISTEME will enable a better understanding of the issues of thought formation, the relationship between philosophy and science, and modern society, where the emergence of mathematical natural science in the 17th century is the pillar on which Europe and European humanity stand. The student will be able to understand the questions and problems of today if he discovers the foundations and contexts leading to serious questions of today's form of society, thinking, science and culture.					
<b>Recommended literature:</b>					
<b>Course language:</b>					
<b>Notes:</b>					
<b>Course assessment</b> Total number of assessed students: 31					
A	B	C	D	E	FX
80.65	6.45	6.45	0.0	6.45	0.0
<b>Provides:</b> doc. PhDr. Peter Nezník, CSc.					

<b>Date of last modification:</b> 24.08.2022
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ AS1/03	<b>Course name:</b> Asymmetric synthesis
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Two tests, in 7th and 14th week. Test max 50 points. A student must obtain at least 51% of points from each test. Writing of the tests is mandatory. Written exam, 100 points. A student must obtain at least 51% of points. Final evaluation: A 91-100 pts, B 81-90 pts, C 71-80 pts, D 61-70 pts, E 51-60 pts, FX 0-50 pts.	
<b>Learning outcomes:</b> The basic course on the modern concepts of asymmetric synthesis and some relationships between the reactivity and steric demands of the organic compounds. The Chiron approach in the stereoselective synthesis of natural products. After completing the subject, the student understands the stereochemical aspects of reactions in organic synthesis with an emphasis on controlling their chemo-, diastereo- and enantioselective processes. He has knowledge of modern asymmetric synthesis, which he can apply in solving given synthetic problems.	
<b>Brief outline of the course:</b> Chiral substrate, chiral auxiliaries and catalysts, kinetic and thermodynamic resolution, double asymmetric induction, Cram, Carabatsos a Felkin-Ahn model, chelation model, Cornforth dipolar model, Burgli-Dunitz's model, stereoselective synthesis and activation energy. Examples of syntheses: cyclopropanation, alkylation of ketones, preparation of 2-substituted carboxylic acids, amino acids, alcohols, Michael reaction, Diels-Alder cycloaddition, chiral acids and bases, rearrangements, enzymatic methods, Sharpless asymmetric epoxidation of allylic alcohols and kinetic resolution, asymmetric sulfoxidation, Jacobsen-Katsuky asymmetric epoxidation of cis-alkenes, Sharpless asymmetric dihydroxylation, ligand acceleration and deceleration effects, vanadium-catalyzed asymmetric oxidations, Bolm asymmetric oxidation, Davis oxaziridines, chiral dioxiranes, asymmetric aminohydroxylation, asymmetric hydrogenation, phosphine ligands, asymmetric isomerisation of alkenes, Takasago process and industrial synthesis of (#)-menthol, asymmetric transfer of hydrogen and reduction of ketones, Corey asymmetric reduction, asymmetric aldol reactions, Evans auxiliaries, asymmetric organocatalysis.	
<b>Recommended literature:</b> 1. Stephenson G.R.: Advanced asymmetric synthesis, Blackie Academic and Professional, London, 1996.	

2. Ager D.J., East M.B.: Asymmetric synthetic methodology, CRC Press, Boca Raton, 1996.
3. ucebné texty on-line: <http://uchv.upjs.sk/AS>
4. Christmann M., Brase, S.: Asymmetric synthesis II: More methods and Applications, 2012 Wiley#VCH Verlag GmbH & Co. KGaA 2012, ISBN:9783527329212. Online ISBN:9783527652235.

**Course language:**

english

**Notes:**

Teaching is carried out in person or, if necessary, online using the MS Teams tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.

**Course assessment**

Total number of assessed students: 140

A	B	C	D	E	FX
67.14	21.43	6.43	2.86	2.14	0.0

**Provides:** prof. Mgr. Radovan Šebesta, DrSc.

**Date of last modification:** 04.08.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ ZCI/04	<b>Course name:</b> Basic cheminformatics tools
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Participation in lectures and seminars in accordance with the Study Rules of PF UPJŠ. Successful completion of the final written exam (obtaining at least 51%) and presentation of a semester project. 30 p – semester project. 70 p – Final written exam. Percentage rating: 100 - 91% (A), 90 - 81% (B), 80 - 71% (C), 70 - 61% (D), 60 - 51% (E), 50% and less FX.	
<b>Learning outcomes:</b> The aim of lectures and seminars is to introduce students basic information about the field of cheminformatics, the use in solving chemical problems, management and subsequent use especially in the development of new drugs and materials. After completing the course, the student should know the manipulation of 2D and 3D structure in database systems, the relationship between structure and research of chemicals and procedures used in the analysis and processing of larger volumes obtained using HTS techniques, combinatorial chemistry, etc.	
<b>Brief outline of the course:</b> The course is 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. 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. <ol style="list-style-type: none"> <li>1. Basic terms.</li> <li>2. Phys.-chem calculations properties of the compounds.</li> <li>3. Experimental sources phys.-chem. properties of the compounds.</li> <li>4. Description of 2D and 3D structures and manipulation with them.</li> <li>5. Databases, storage of chemical information.</li> <li>6. Structural search.</li> <li>7. Structural search - similarity and diversity at the molecular level.</li> <li>8. Molecular descriptors.</li> </ol>	

9. Relationship between structure and properties. 10. Combinatorial chemistry. 11. HTS, virtual screening - data mining.					
<b>Recommended literature:</b> 1. Johann Gasteiger & Thomas Engel (editors): Chemoinformatics: A Textbook, Wiley-VCH, Weinheim, 2003 2. Andrew Leach & Valerie Gillet: An Introduction to Chemoinformatics, Kluwer Academic Publishers, Dordrecht, NL, 2003.					
<b>Course language:</b> slovak language, english language					
<b>Notes:</b> In-person course, alternatively online course using the BigBlueButton tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 0					
A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0
<b>Provides:</b> RNDr. Monika Tvrdoňová, PhD.					
<b>Date of last modification:</b> 04.08.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice					
<b>Faculty:</b> Faculty of Science					
<b>Course ID:</b> ÚCHV/ BOC/18		<b>Course name:</b> Bioorganic Chemistry			
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present					
<b>Number of ECTS credits:</b> 5					
<b>Recommended semester/trimester of the course:</b>					
<b>Course level:</b> II.					
<b>Prerequisites:</b>					
<b>Conditions for course completion:</b> 1. Individual work and activity in seminars. 2. Passing a written exam with a success rate of min. 51%.					
<b>Learning outcomes:</b> Metodology of organic chemistry used to understanding of processes in living forms. Mechanism of the basic biochemical processes including proteosynthesis, enzymatic catalysis, nucleic acid chemistry, photosynthesis.					
<b>Brief outline of the course:</b>					
<b>Recommended literature:</b> H. Dugas: Bioorganic Chemistry, Wiley, London 1995.					
<b>Course language:</b> Slovak language					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 24					
A	B	C	D	E	FX
58.33	25.0	0.0	16.67	0.0	0.0
<b>Provides:</b> RNDr. Jana Špaková Raschmanová, PhD., RNDr. Ján Elečko, PhD.					
<b>Date of last modification:</b> 21.12.2021					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice					
<b>Faculty:</b> Faculty of Science					
<b>Course ID:</b> KF/KDF/05		<b>Course name:</b> Chapters from History of Philosophy of 19th and 20th Centuries (General Introduction)			
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present					
<b>Number of ECTS credits:</b> 2					
<b>Recommended semester/trimester of the course:</b> 2.					
<b>Course level:</b> II.					
<b>Prerequisites:</b>					
<b>Conditions for course completion:</b>					
<b>Learning outcomes:</b>					
<b>Brief outline of the course:</b>					
<b>Recommended literature:</b>					
<b>Course language:</b>					
<b>Notes:</b>					
<b>Course assessment</b> Total number of assessed students: 10					
A	B	C	D	E	FX
50.0	20.0	10.0	0.0	10.0	10.0
<b>Provides:</b> PhDr. Dušan Hruška, PhD.					
<b>Date of last modification:</b> 03.05.2015					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ CHN/09	<b>Course name:</b> Chemical nanotechnology
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 0 <b>Per study period:</b> 28 / 0 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b> 4.	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Participation in lectures in accordance with the Study Rules of PF UPJŠ. Midterm exam (success rate min. 51% ) and final written exam (success rate min. 51% ). Percentage rating: 100 - 91% (A), 90 - 81% (B), 80 - 71% (C), 70 - 61% (D), 60 - 51% (E), 50% and less FX. 30 p – Midterm exam. 70 p – Final written exam.	
<b>Learning outcomes:</b> To provide students basic knowledge of the chemistry of organic nanomaterials. Students will be familiar with different types of nanomaterials, their synthesis and use in nanotechnology. Introduction how the nanotechnology manipulates individual atoms and molecules to produce materials for applications at the submicroscopic level.	
<b>Brief outline of the course:</b> The content of the course is a complex study of organic nanostructured materials, organic molecular nanotechnology and application in sensors, robotics and medicine. Students will get acquainted with modern trends in nanotechnology with a focus on the role of chemistry in the creation and use of nanostructured materials and devices. 1. Introduction to nanomaterial chemistry, the concept of intelligent synthetic and biological macromolecules. 2. Nanoparticles - types, properties and uses. Organic nanofibers and nanotubes. 3. Carbon nanomaterials, fullerenes. 4. Dendrimers and calixarenes. 5. Conductive and switchable polymers, organic photochromic and thermochromic compounds. 6. Intelligent DNA nanostructures. 7. Application of nanomaterials in molecular electronics, photonics and medicine. 8. Sensors and biosensors. Organic semiconductors. 9. Methods of synthesis of nanomaterials - bottom-up and top-down methods. 10. Modern trends in organic nanotechnology.	
<b>Recommended literature:</b>	

1. Organic Nanomaterials: Synthesis, Characterization, and Device Applications, Editors: Torres, T.; Bottari, G., John Wiley & sons, 2013.; 2. Steed, J. W.; Turner, D. R. Wallace, K. J. Core concepts in supramolecular chemistry and nanochemistry; John Wiley & sons, Chichester 2007; 3. Steed, J. W. Supramolecular chemistry, John Wiley and Sons Ltd., 2009.

**Course language:**

slovak, english

**Notes:**

In-person course, alternatively online course using the BigBlueButton tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.

**Course assessment**

Total number of assessed students: 4

abs	n
100.0	0.0

**Provides:** RNDr. Martin Walko, PhD.

**Date of last modification:** 04.08.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ PRL/18	<b>Course name:</b> Chemistry of Natural Compounds
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Seminar written report on the selected topic of this subject and its oral presentation connected with the discussion. Terminal examination by the written form. The written part is evaluated as follows: 100-91% of points = A, 90-81% of points = B, 80- 71% of points = C, 70-61% = D, 60-51% of points = E, 50% and less = FX. A student must obtain at least 51% of points.	
<b>Learning outcomes:</b> General review on the selected groups of natural products, especially secondary metabolites such as alkaloids and terpenoids and their biosynthetic pathways.	
<b>Brief outline of the course:</b> Primary and secondary metabolism. Secondary metabolites an their building blocks. Biosynthesis of shikimic and mevalonic acid as intermediates of biosynthesis of building blocks. Chemistry of saccharides. Nomenclature of carbohydrates an its stereochemistry. Monosaccharide derivatives. Oligosaccharides, and polysaccharides. Chemistry of lipids, their classification, sphingolipids, glycosphingolipids, their biosynthesis and metabolism. Prostaglandins. Amino acids and peptides. Alkaloids, their classification. Protoalkaloids, tropane alkaloids, indole alkaloids, opiate alkaloids, their biosynthetic pathways. Terpenoids. Biosynthesis of monoterpenes, sesquiterpenes, diterpenes.	
<b>Recommended literature:</b> 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 Biosynthetic Approach, 3rd Edition, John Wiley and Sons, Ltd. 2009, England, ISBN: 978-0-470-74168-9.	
<b>Course language:</b> english	
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.	

<b>Course assessment</b>					
Total number of assessed students: 24					
A	B	C	D	E	FX
54.17	25.0	12.5	4.17	4.17	0.0
<b>Provides:</b> doc. RNDr. Miroslava Martinková, PhD.					
<b>Date of last modification:</b> 20.12.2021					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ROP/15	<b>Course name:</b> Class Project
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 6 <b>Per study period:</b> 84 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 6	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Experimental work in physical and organic chemistry laboratories, evaluation of results, discussion, results presentation, seminars and scientific meetings.	
<b>Learning outcomes:</b> Project work and presentation.	
<b>Brief outline of the course:</b> Experimental work in research field for master degree . Evaluation of results and verbal presentation and discussion about.	
<b>Recommended literature:</b> Recent journal references. Chemical on-line databases.	
<b>Course language:</b> english	
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BigBlueButton tools. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.	
<b>Course assessment</b> Total number of assessed students: 66	
abs	n
100.0	0.0
<b>Provides:</b> 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., RNDr. Monika Tvrdoňová, PhD., RNDr. Ján Elečko, PhD., doc. RNDr. Ladislav Janovec, PhD., RNDr. Jana Špaková Raschmanová, PhD., RNDr. Slávka Hamuľáková, PhD., RNDr. Mariana Budovská, PhD., doc. RNDr. Mária Vilková, PhD.	
<b>Date of last modification:</b> 07.11.2022	

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> KPPaPZ/KK/07	<b>Course name:</b> Communication and Cooperation
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week: 2 Per study period: 28</b> <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 2	
<b>Recommended semester/trimester of the course:</b> 3.	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Evaluation: A condition for student evaluation is his active participation in the seminar. It is expected that the student will actively participate in the discussions and will express their positions and possible solutions. The output for evaluation will be the development of a project in the form of a Power Point presentation or a video on a selected communication topic.	
<b>Learning outcomes:</b> The goal of the subject Communication, cooperation is the formation and development of students' language and communication skills through experiential activities. The student can demonstrate an understanding of individual behavior in various communication contexts. The student can describe, explain and evaluate communication techniques (cooperation, assertiveness, empathy, negotiation, persuasion) in practical contexts. The student can apply these techniques in common communication schemes.	
<b>Brief outline of the course:</b> Communication Communication theory Non-verbal communication and its means Verbal communication (basic components of communication, language means of communication) about active listening Empathy Short conversation and effective communication (principles and principles of effective communication) Cooperation About the basics of cooperation About types, signs, types and factors of cooperation Characteristics of the team (positions in the team) Small social group (structure, development, characteristics of a small social group, position of the individual in the group)	

About leadership (characteristics of the leader, management, leadership styles)		
<b>Recommended literature:</b>		
<b>Course language:</b>		
<b>Notes:</b>		
<b>Course assessment</b>		
Total number of assessed students: 281		
abs	n	z
98.22	1.78	0.0
<b>Provides:</b> Mgr. Ondrej Kalina, PhD., Mgr. Lucia Barbierik, PhD.		
<b>Date of last modification:</b> 31.07.2022		
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.		

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ KC/03	<b>Course name:</b> Cosmetic chemistry
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Seminar written report on the selected topic of this subject and its oral presentation connected with the discussion. Terminal examination by the written form. The corresponding written part is evaluated as follows: 100-91% of points = A, 90-81% of points = B, 80- 71% of points = C, 70-61% = D, 60-51% of points = E, 50% and less = FX. A student must obtain at least 51% of points.	
<b>Learning outcomes:</b> The basic chemical ingredients in cosmetic products, their isolation from natural sources. The construction of some interesting groups of the organic structures and their application in cosmetic industry.	
<b>Brief outline of the course:</b> Skin and its components. The chemistry of lipids. Lipids, their classification (triacylglycerols, glycerophospholipids and sphingophospholipids), 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.	
<b>Recommended literature:</b> 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 Berlin 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. Pybus, D. H., Sell, C. S.: The chemistry of fragrances, The Royal Society of Chemistry 1999 UK, ISBN: 0-85404-528-7 5. J. McMurry: Organic chemistry, Brooks/Cole, a Thomson Learning Company 2004, Sixth Edition, ISBN 0534389996.	
<b>Course language:</b>	

slovak, english					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 86					
A	B	C	D	E	FX
79.07	15.12	4.65	1.16	0.0	0.0
<b>Provides:</b> doc. RNDr. Miroslava Martinková, PhD.					
<b>Date of last modification:</b> 28.01.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice					
<b>Faculty:</b> Faculty of Science					
<b>Course ID:</b> ÚCHV/ODPFC/01		<b>Course name:</b> Defence of Diploma Thesis			
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present					
<b>Number of ECTS credits:</b> 16					
<b>Recommended semester/trimester of the course:</b>					
<b>Course level:</b> II.					
<b>Prerequisites:</b>					
<b>Conditions for course completion:</b>					
<b>Learning outcomes:</b>					
<b>Brief outline of the course:</b>					
<b>Recommended literature:</b>					
<b>Course language:</b>					
<b>Notes:</b>					
<b>Course assessment</b> Total number of assessed students: 62					
A	B	C	D	E	FX
88.71	6.45	3.23	1.61	0.0	0.0
<b>Provides:</b>					
<b>Date of last modification:</b> 26.01.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ SEM1a/00	<b>Course name:</b> Diploma work seminar
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> The elaboration of theoretical overview on the basis of the provided studying materials, including the list of literature. Finally, it will represent the theoretical part of the final master's thesis. The evaluation is individual, based on the assessment of the quality of provided material by the supervisor.	
<b>Learning outcomes:</b> The acquisition of basic skills for writing a theoretical overview of the final diploma thesis. Gaining the skills in handling with literary sources. Acquirement the knowledge about the correct citation of used literature (citation of magazines, books, monographs, patents).	
<b>Brief outline of the course:</b> Individual consultations of the student with the supervisor of the final master's thesis. Consultations on writing a theoretical overview. Working with literary sources and online chemical databases. Ways of quoting individual literary sources (article in a journal, book citation, patent). Working with drawing programs (ChemDraw Professional).	
<b>Recommended literature:</b> The recommended literature will be assigned by the supervisor of the master's thesis.	
<b>Course language:</b> slovak, english	
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.	

<b>Course assessment</b>					
Total number of assessed students: 119					
A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0
<b>Provides:</b> doc. RNDr. Ladislav Janovec, PhD., doc. RNDr. Miroslava Martinková, PhD., RNDr. Slávka Hamuláková, PhD., RNDr. Mariana Budovská, PhD., RNDr. Ján Elečko, PhD., RNDr. Jana Špaková Raschmanová, PhD., RNDr. Monika Tvrdoňová, PhD.					
<b>Date of last modification:</b> 10.01.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice					
<b>Faculty:</b> Faculty of Science					
<b>Course ID:</b> ÚCHV/SEM1b/00		<b>Course name:</b> Diploma work seminar			
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present					
<b>Number of ECTS credits:</b> 2					
<b>Recommended semester/trimester of the course:</b>					
<b>Course level:</b> II.					
<b>Prerequisites:</b> ÚCHV/SEM1a/00					
<b>Conditions for course completion:</b> Working in a synthetic laboratory. Elaboration of the assigned part of experimental procedures with spectral data and other physical-chemical characteristics of synthesized compounds, which will be part of the final master's thesis.					
<b>Learning outcomes:</b> Acquisition of laboratory skills and knowledge necessary for the elaboration of the experimental part of the final work and writing a chapter on results and discussion.					
<b>Brief outline of the course:</b> Individual consultations of the supervisor of the master's thesis with the student during the work in the synthetic laboratory and the writing of the final thesis. Solving synthetic problems in the laboratory while fulfilling the objectives of the master's thesis. Solution of spectra and basic instruction for writing the procedures, spectral data and other physical-chemical characteristics of synthesized compounds, which will be part of the experimental part of the work.					
<b>Recommended literature:</b> The recommended literature will be defined and provided by the supervisor of the master's thesis and will relate to the assigned scientific thesis.					
<b>Course language:</b> slovak, english					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 106					
A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0

<b>Provides:</b> doc. RNDr. Ladislav Janovec, PhD., doc. RNDr. Miroslava Martinková, PhD., RNDr. Mariana Budovská, PhD., RNDr. Slávka Hamuláková, PhD., RNDr. Ján Elečko, PhD., RNDr. Jana Špaková Raschmanová, PhD., RNDr. Monika Tvrdoňová, PhD.
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<b>Date of last modification:</b> 10.01.2022
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<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.
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## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice					
<b>Faculty:</b> Faculty of Science					
<b>Course ID:</b> ÚCHV/ PCH1/00		<b>Course name:</b> Food chemistry			
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present					
<b>Number of ECTS credits:</b> 4					
<b>Recommended semester/trimester of the course:</b> 3.					
<b>Course level:</b> I., II.					
<b>Prerequisites:</b>					
<b>Conditions for course completion:</b> Active work during semester, presentation on certain theme. Two exams, one in the middle and second at the end of semester (min. 51%). A: 91-100b, B: 81-90b, C: 71-80b, D: 61-70b, E: 51-60b, FX: 0-50b.					
<b>Learning outcomes:</b> Students will receive informations and knowledges about chemical substances in food, their importance and chemical changes in food during processing and storage.					
<b>Brief outline of the course:</b> 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.					
<b>Recommended literature:</b>					
<b>Course language:</b> english					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 296					
A	B	C	D	E	FX
65.88	29.39	4.39	0.0	0.0	0.34
<b>Provides:</b> RNDr. Ján Elečko, PhD.					
<b>Date of last modification:</b> 28.01.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ HZ1/00	<b>Course name:</b> Heterocyclic compounds
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Two written tests 2 x 20 pts. A minimum of 11 points must be obtained in each test. Written exam 60 pts. A minimum of 31 points must be obtained. A 100 pts. in total. Assessment A: 91-100; B: 81-90; C: 71-80; D: 60-71; E: 51-60; FX: 0-50 pts.	
<b>Learning outcomes:</b> Goal of the subject is to afford the basic information about occurrence, practical significance, synthesis, chemical and biological properties of heterocyclic compounds.	
<b>Brief outline of the course:</b> Preparation and properties 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 basis of heterocycles and their synthesis. <ol style="list-style-type: none"> <li>1. Introduction, nomenclature of heterocycles</li> <li>2. Six-membered heterocycles with one heteroatom (pyridine, acridine)</li> <li>3. Six-membered heterocycles with one heteroatom (quinoline, isoquinoline)</li> <li>4. Five-membered heterocycles with one heteroatom (pyrrole, furan)</li> <li>5. Five-membered heterocycles with one heteroatom (thiophene, indole)</li> <li>6. Six-membered heterocycles with two heteroatoms (pyrimidine, pyridazine, pyrazine)</li> <li>7. Six-membered heterocycles with two heteroatoms (purine, pteridine)</li> <li>8. Five-membered heterocycles with two heteroatoms (oxazole, isoxazole)</li> <li>9. Five-membered heterocycles with two heteroatoms (thiazole, isothiazole)</li> <li>10. Five-membered heterocycles with two heteroatoms (imidazole, pyrazole)</li> <li>11. Non-aromatic heterocycles (tetrahydrofuran, 1,4-dioxane)</li> <li>12. Non-aromatic heterocycles (morpholine, piperidine, piperazine)</li> </ol>	
<b>Recommended literature:</b> <ol style="list-style-type: none"> <li>1. Gilchrist T.L.: Heterocyclic Chemistry, Longman Harlow 1992.</li> <li>2. Eichler T., Hauptmann S.: The Chemistry of Heterocycles. Structure, Reactions, Synthesis and Application. Second Edition, WILEY-VCH, Weinheim, 2003.</li> </ol>	

<b>Course language:</b> Slovak					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 155					
A	B	C	D	E	FX
58.71	27.1	9.68	3.23	1.29	0.0
<b>Provides:</b> RNDr. Mariana Budovská, PhD.					
<b>Date of last modification:</b> 21.12.2021					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> KF/DF2p/03	<b>Course name:</b> History of Philosophy 2 (General Introduction)
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> I., II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> The condition for awarding the evaluation will be the active approach of students to fulfilling their study obligations, independent work with selected philosophical texts in the library, active participation and creative work in seminars. In connection with the possibility of interrupting face-to-face teaching, there will be greater demands on the student's independent study and the processing of professional literature, which will be continuously evaluated, using e-mail to communicate with the teacher, at the end of the semester, preparing and handing in the semester's seminar work by the set date, or also passing a knowledge test - about which the students will be informed in advance in sufficient time.	
<b>Learning outcomes:</b> Deepening knowledge about the development of spiritual culture in the European spiritual space and pointing out the most important sources of this development: (1) ancient philosophy and science, (2) Christianity as the second pillar of Europe, (3) the Renaissance and the emergence of modern science (mathematical natural science ) as the third pillar of European development. Development of critical thinking skills, active position in professional (ethics of science), public and private life (ethics of responsibility). Transcending narrowly specialized views of the world.	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b> Antológia z diel filozofov. Predsokratovci a Platon. Zost. J. Martinka. Bratislava: Nakladateľstvo Epocha 1970; Antológia z diel filozofov. Od Aristotela po Plotina. Zost. J. Martinka. Bratislava: Nakladateľstvo Pravda 1972. Predsokratovci a Platon. Antológia z diel filozofov. Zost. J. Martinka. Bratislava: Vydavateľstvo Iris 1998. Od Aristotela po Plotina. Antológia z diel filozofov. Zost. J. Martinka. Bratislava: Vydavateľstvo IRIS 2006. Anzenbacher, A.: Úvod do filozofie. Prel. K. Šprunk. Praha: SPN 1990. Barthes, R.: Mytologie. Prel. J. Fulka. Praha: Dokořán 2004. Bělohradský, V.: Společnost nevolnosti. Eseje z pozdější doby. Praha: SLON 2009. Benjamin, W.: Iluminácie. Prel. A. Bžoch; J. Truhlářová. Bratislava: Kalligram 1999. Borges, J. L.: Borges ústne. Prednášky a eseje. Prel. P. Šišmišová. Bratislava: Kalligram 2005. Cassirer, E.: Esej o človeku. Prel. J. Piaček. Bratislava: Nakladateľstvo Pravda 1977. Debord, G.: Společnost spektaklu. Prel. J. Fulka; P. Siostrzonek. Praha: Nakladatelství :intu: 2007. Farkašová, E.: Na rube plátna. Bratislava: Vydavateľstvo Spolku slovenských spisovateľov 2013.	

Feyerabend, P.: Věda jako umění. Prel. P. Kurka. Praha: JEŽEK 2004. Freud, S.: Nepokojenost v kultuře. Prel. L. Hošek. Praha: Hynek 1998. Hadot, P.: Co je antická filosofie. Prel. M. Křížová. Praha: Vyšehrad 2017. Hippokratés: Vybrané spisy. Prel. H. Bartoš; J. Černá; J. Daneš; S. Fischerová. Praha: OIKOYMENH 2012. Husserl, E.: Filosofie jako přísná věda. Prel. A. Novák. Praha: Togga 2013. Kuhn, T. S.: Štruktúra vedeckých revolúcií. Prel. J. Viceník. Bratislava: Nakladateľstvo Pravda 1981. Leško, V., Mihina, F. a kol.: Dejiny filozofie. Bratislava. Iris 1993. Leško, V.: Dejiny filozofie I. Od Tálesa po Galileiho. Prešov: v. n. 2004, 2007. Leško, V.: Dejiny filozofie II. Od Bacona po Nietzscheho. Prešov: v. n. 2008. McLuhan, M.: Jak rozumět médiím. Extenze člověka. Prel. M. Calda. Praha: Mladá fronta 2011. Patočka, J.: Duchovní člověk a intelektuál. In: Patočka, J.: Péče o duši III. Praha: OIKOYMENH 2002, s. 355 - 371. Popper, K. R.: Otevřená společnost a její nepřátelé I. Platónovo zařikávání. Prel. M. Calda; J. Moural. Praha: OIKOYMENH 2011. Sloterdijk, P.: Kritika cynického rozumu. Prel. M. Szabó. Bratislava: Kalligram 2013. Störig, H. J.: Malé dějiny filozofie. Prel. P. Rezek. Praha: Zvon 1991. Wittgenstein, L.: Filozofické skúmania. Prel. F. Novosád. Bratislava: Nakladateľstvo Pravda 1979. Wright von, H. G.: Humanizmus ako životný postoj. Prel. M. Žitný. Kalligram 2001. Žižek, S.: Mor fantázií. Prel. M. Gálisová; V. Gális. Bratislava: Kalligram 1998.

**Course language:**

**Notes:**

**Course assessment**

Total number of assessed students: 746

A	B	C	D	E	FX
60.59	14.21	12.6	8.58	3.35	0.67

**Provides:** doc. PhDr. Peter Nezník, CSc.

**Date of last modification:** 11.07.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> KF/IH2/03	<b>Course name:</b> Idea Humanitas 2 (General Introduction)
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 2	
<b>Recommended semester/trimester of the course:</b> 3.	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> 100% graded credit: 40% (evaluated participation in seminars, processing of partial seminar work - separate assignment) 60% (final seminar work - student project). In the case of implementation of the classical form of teaching - face-to-face - active participation of the student in the seminar; study and reflection of assigned philosophical texts, attempt to interpret them. In the case of the introduction of distance education (as was the case due to Covid-19), the student will have to actively fulfill tasks of a partial nature, where increased demands will be placed on the student and his independent work with philosophical texts and literature. Tasks will be assigned to the students by the teacher on an ongoing basis. The student must study the assigned philosophical texts, think through and process them, submit them as a seminar paper, i.e. in written form. In both cases, the study of literature is necessary to pass the subject. The conclusion of the subject is the preparation of a seminar paper - the final seminar paper - in the range of at least 10 - 12 pages of A4 (with compliance with the bibliographic standard of the Department of Philosophy (KF) for seminar and qualification papers).	
<b>Learning outcomes:</b> To supplement and expand the interest of natural science students in social science issues related to the issues of the development of philosophy, science and human leadership, which are manifested in the urgent problems of today's world and society. Special emphasis is placed on the formation of humanistic ideas, their origin, transformation and possible pitfalls and risks. In addition to thinking about serious questions of the past and present, it also includes thinking about the present and the current contexts of major topics in philosophy and Western culture in particular. Therefore, the preparation and implementation of a program aimed at cooperation with alternative directions of pedagogy in the conditions of our transforming education system is understood as a practical output.	
<b>Brief outline of the course:</b> The age of the image of the world. Doubt as a principle of philosophy. The emergence of the image of the world (Weltbild); the differences of ancient theoria, medieval scientia, the emergence of mathematical natural science. Science as an operation (Betrieb); institutionalization of science. Philosophy, science and the modern world. The movement of human life: acceptance, defense, freedom as struggle, submission to finitude. The modern world and the search for meaning. Bureaucracy, impersonality, predominance of technocratic approaches. Fatigue as a modern threat	

to Europe. The paths to freedom lead through the rediscovery of one's own Self and creativity. The basic condition for the educability of any education is the care of the soul. The crisis of European humanity. Antiquity. Philosophy - the emergence of a special community of people, the beginnings of education - paideia. The winding road of leadership. The origin and birthplace of calculating thinking. Europe and the post-European era. Care of the soul as a basic idea of Patočka's philosophy. The difference in the position of Plato and Democritus in understanding the care of the soul. The idea of caring for the soul and Aristotle.

**Recommended literature:**

Hadot, P.: What is ancient philosophy. Transl. M. Křížová. Prague: Vyšehrad 2017. Hegel, G. W. F.: Phenomenology of Spirit. Prague: NČSAV 1960 Husserl, E.: The Crisis of European Humanity and Philosophy. In: Crisis of European sciences and transcendental phenomenology. Prague: Akademie 1996. Mokrejš, A.: Eros as a Theme of Greek Thought. Prague: Triton 2009. Patočka, J.: Péče o duši I. Prague. OIKOYMENH 1996. Patočka, J.: Care of the soul II. Prague. OIKOYMENH 1999. Vernant, J.-P.: The beginnings of Greek thought. Prague: OIKOYMENH 1995. Wright von, G.H.: Humanism as a life attitude. Bratislava: Kalligram 2001.

**Course language:**

**Notes:**

**Course assessment**

Total number of assessed students: 12

A	B	C	D	E	FX
91.67	8.33	0.0	0.0	0.0	0.0

**Provides:** doc. PhDr. Peter Nezník, CSc.

**Date of last modification:** 24.08.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ FMCH/18	<b>Course name:</b> Medicinal Chemistry
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Written seminar paper and its presentation. One written test 50 pts. A minimum of 26 points must be obtained in test. Written exam 50 pts. A minimum of 26 points must be obtained in test. A 100 pts. in total. Assessment A: 91-100; B: 81-90; C: 71-80; D: 60-71; E: 51-60; FX: 0-50 pts.	
<b>Learning outcomes:</b> 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.	
<b>Brief outline of the course:</b> <ol style="list-style-type: none"> <li>1. Introduction, classification of drugs</li> <li>2. Factors influencing design and activity of drugs of the third generation</li> <li>3. Drug chirality</li> <li>4. Search for new drugs, structure-activity relationships</li> <li>5., 6. Chemotherapeutics of central, peripheral and vegetative nervous system</li> <li>7. Antibacterial compounds</li> <li>8. Antitumor compounds</li> <li>9. Antiviral compounds</li> <li>10. Antitussives and expectorants</li> <li>11. Disinfectants</li> <li>12. Excretory and digestive system drugs</li> </ol>	
<b>Recommended literature:</b> <ol style="list-style-type: none"> <li>1. Medicinal Chemistry: Principles and Practice, King F. D., Ed., The Royal Society of Chemistry, Thomas Graham House, Cambridge, 1994.</li> <li>2. Advances in Drug Discovery Techniques: Harvey A. L., Ed., Wiley &amp; Sons, Chichester, 1998.</li> <li>3. Gareth T.: Medicinal Chemistry: An introduction. John Wiley &amp; Sons, 2000.</li> </ol>	

<b>Course language:</b> Slovak					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 27					
A	B	C	D	E	FX
44.44	33.33	11.11	7.41	3.7	0.0
<b>Provides:</b> RNDr. Mariana Budovská, PhD.					
<b>Date of last modification:</b> 21.12.2021					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ MSM1/00	<b>Course name:</b> Modern synthetic methods
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 3 / 1 <b>Per study period:</b> 42 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 6	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Two tests, in 7th and 14th week. Test max 50 points. A student must obtain at least 51% of points from each test. Writing of the tests is mandatory. Written exam, 100 points. A student must obtain at least 51% of points. Final evaluation: A 91-100 pts, B 81-90 pts, C 71-80 pts, D 61-70 pts, E 51-60 pts, FX 0-50 pts.	
<b>Learning outcomes:</b> Basic review on modern 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, coupling reactions and the functional group protection.	
<b>Brief outline of the course:</b> Protective groups in modern organic synthesis. Protection of hydroxyl groups, amino groups, carbonyl and carboxyl functionalities. Novel oxidative reagents and procedures in organic synthesis. Oxidation of primary and secondary hydroxyl groups, oxidative transformation of primary alcohols to carboxylic functionality, oxidation of aldehydes into carboxylic acids. Oxidation of double bonds. Hydroboration, epoxidation and dihydroxylation. Oxidative cleavage of the functionalized double bonds. Reductions and reductive reagents in modern organic synthesis. Reduction of double bonds, reduction of carbonyl groups. Reduction of carboxylic functionality. Reduction esters, amides and further related derivatives. Retrosynthesis, synthons, synthetic equivalents and umpolung. Heterolytic retrosynthetic disconnection of C-C bonds. Synthon method of synthesis mono- and bifunctional compounds. Change of functional group. Linear and convergent synthesis. Formation of C-C and C=C bonds using transition metal catalysts, coupling reactions and metathesis.	
<b>Recommended literature:</b> 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.					
<b>Course language:</b> slovak, english					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 143					
A	B	C	D	E	FX
60.14	19.58	11.89	6.99	1.4	0.0
<b>Provides:</b> doc. RNDr. Miroslava Martinková, PhD., RNDr. Ján Elečko, PhD., doc. RNDr. Ladislav Janovec, PhD.					
<b>Date of last modification:</b> 31.01.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ MM1/00	<b>Course name:</b> Molecular modeling
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 1 / 3 <b>Per study period:</b> 14 / 42 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> The examination can consist of written and oral examination as the examiner may determine. In order to pass this course, each student must complete ALL of the following compulsory requirements: Students may only miss 1 exercise session. Students must complete 10 assignments (and submit them as reports) as there are specified in the textbook (Lit.4). Students must obtain at least 51 percent of the total number of points of the written examination. The final evaluation is assigned on the basis of the mark of the written examination. Students are assigned a grade in the course as follows: 100 - 91% (A), 90 - 81% (B), 80 - 71% (C), 70 - 61% (D), 60 - 51% (E), 50% and less FX.	
<b>Learning outcomes:</b> 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 small and middle-sized molecules and study the thermodynamical and structural aspects of the chemical reactions.	
<b>Brief outline of the course:</b> Principles of molecular modeling. Molecular graphics. Graphics and modeling software. Internet tools for graphics and modeling. Representation of the shape of molecules. Computational chemistry. Force field methods and molecular mechanics. Energy minimization. Molecular mechanics: scope, limitations and development. Quantum mechanics. Time-independent Schrodinger equation. Hartree-Fock and Roothaan equations. Ab initio methods. Correlation energy. Configuration interaction. Moller-Plesset perturbation theory. Semiempirical methods, MNDO, AM1, PM3, PM7. Methods of electron density functionals. Hybrid QM / MM methods. Simulation methods. Monte Carlo method, Molecular dynamics. Application of molecular modeling. Small molecules. Geometry of molecules. Thermochemistry. Intermolecular interactions. Modeling of drug-receptor complexes. Sites of drug action. Molecular mechanism of drugs action. Origin and chemistry of drug binding to the receptor. Receptor - the primary sites of drugs action. Computer Aided Drug Design (CADD). The contribution of CADD to the development of new drugs. Theoretical analysis of drug-receptor interaction. Ligand design methods. Solvent effect.	
<b>Recommended literature:</b>	

1. LEACH, Andrew R.: Molecular Modelling: Principles and Applications. 2. JENSEN, Frank: An Introduction to Computational Chemistry. 3. Manuals for MOPAC, HYPERCHEM, GAMESS, GAUSSIAN. 4. Praktikum z molekulového modelingu / Ladislav Janovec					
<b>Course language:</b> slovak language and english language					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams platform. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously					
<b>Course assessment</b> Total number of assessed students: 79					
A	B	C	D	E	FX
82.28	17.72	0.0	0.0	0.0	0.0
<b>Provides:</b> doc. RNDr. Ladislav Janovec, PhD.					
<b>Date of last modification:</b> 11.08.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ NMRP/14	<b>Course name:</b> NMR praktikum
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 3 <b>Per study period:</b> 42 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 6	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> 1. Attendance at seminars (this also applies to the online form of teaching): justified student non-participation in two seminars will be justified by the teacher; longer-term justified non-participation of the student in seminars must be demonstrated mastery of the curriculum by the student in an alternative form determined by the teacher (eg elaboration of assignments, preparation of a lecture, ...) 2. Activity at seminars (also applies to the online form of teaching) - theoretical preparation of students for all seminars is required 3. Elaboration of written assignments (80% of the total evaluation) according to the instructions of the teacher through the e-learning portal LMS Moodle. 4. Passing the final test through the e-learning portal LMS Moodle (20% of the total evaluation).	
<b>Learning outcomes:</b> To provide students with basic theoretical and practical knowledge about working on NMR spectrometers.	
<b>Brief outline of the course:</b> 1. NMR spectrometer 2. Acquisition of NMR data 3. Processing of 1D NMR data 4. Processing of 2D NMR spectra 5. The most common errors and artifacts in NMR experiments 6. Deconvolution 7. Quantitative NMR 8. Analysis of honey by NMR	
<b>Recommended literature:</b> 1. Horst Friebolin: Basic One- and Two-Dimensional NMR Spectroscopy 5th Ed., Wiley, 2010. 2. Atta-ur-Rahman, M. I. Choudhary: Solving Problems with NMR Spectroscopy. Academic Press, 1996. 3. Eberhard Breitmaier: Structure Elucidation by NMR in Organic Chemistry: A Practical Guide, 3th Revised Ed., Wiley, 2002.	

4. Kováč Š., Ilavský D., Leško J.: Spektrálne metódy v organickej chémii a technológii, ALFA, Bratislava, 1987.
5. Materials on e-learning portal LMS Moodle.

**Course language:**  
english

**Notes:**

Teaching is carried out as follows:

1. practical exercises 1 - 6: all registered students

2nd practical exercises 7 - 12: 3-member groups

Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.

**Course assessment**

Total number of assessed students: 68

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

**Provides:** doc. RNDr. Mária Vilková, PhD.

**Date of last modification:** 28.01.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ NCH/03	<b>Course name:</b> Neurochemistry
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Seminar written report on the selected topic of this subject and its oral presentation connected with the discussion. Terminal examination by the written form. The written part is evaluated as follows: 100-91% of points = A, 90-81% of points = B, 80- 71% of points = C, 70-61% = D, 60-51% of points = E, 50% and less = FX. A student must obtain at least 51% of points.	
<b>Learning outcomes:</b> Explanation of the fundamental principles of the chemical transmission between nerve cells.	
<b>Brief outline of the course:</b> Neurocellular anatomy, characteristics of the neuron. Cell membrane structures - phospholipid bilayer, membrane proteins. Lipids, glycerphospholipids, sphingolipids, their biosynthesis. Cholesterol and its function in cell membranes. Membrane transport and ion channels. Synaptic transmission and cellular signaling. Axonal transport, molecular motors: kinesin, dynein. Neurotransmitters - acetylcholine, catecholamines, serotonin, amino acids (glutamate, aspartate, GABA, glycine). Neuropeptides - neuropeptide functions and regulation. G-proteins, the second-messenger hypothesis (cAMP, IP3, DAG, Ca <sup>2+</sup> ). Metabotropic and ionotropic receptors, their structure.	
<b>Recommended literature:</b> S. T. Brady, G. S. Siegel, R. W. Albers, D. L Price: Basic Neurochemistry. Principles of molecular, cellular, and medicinal neurobiology, eighth edition, Academic Press 2012, UK, ISBN: 978-0-12-374947-5	
<b>Course language:</b> english	
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.	

<b>Course assessment</b>					
Total number of assessed students: 139					
A	B	C	D	E	FX
59.71	18.71	13.67	6.47	1.44	0.0
<b>Provides:</b> doc. RNDr. Miroslava Martinková, PhD.					
<b>Date of last modification:</b> 20.12.2021					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/OCHST/15	<b>Course name:</b> Organic chemistry
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b> Mechanisms of organic reactions, reactive Intermediates, Ionic reactions, Radical reactions, Bond energy reaction, Energetic activation energy reactions Rate and kinetic of organic reactions, Thermodynamic and chemical stability. Benzene and other aromatic Compounds, Fused benzene ring compounds, other Aromatic Systems Factors required for aromaticity. Electrophilic substitution, A substitution mechanism, Reactions of substituted benzenes, Reaction characteristics, Reactions of disubstituted rings. Stereoisomers, chirality and symmetry, Designating of the configuration of stereogenic centers, the sequence rules for the assignment of configuration to stereogenic carbons compounds having two or more stereogenic centers, Fischer projection formulas. Alkenes, Electrophilic additions, Strong Brönsted acids, Lewis acids, (non-proton electrophiles), electrophilic halogen reagents, other electrophilic reagents, Reduction, Oxidation, Radical additions, Allylic substitution. Alkynes, Addition reactions, Hydrogenation Electrophile hydration and tautomerism. Alkyl halides, General reactivity, SN2 Mechanism, SN1 Mechanism, Elimination reaction (E1, E2). Alcohols, reactions of alcohols, nucleophilic substitution, elimination reactions, Oxidation of alcohols, Reactions of phenols, Acidity of phenols, Ring Substitution of phenols. Amines, Basicity of nitrogen compounds, Important reagent bases reactions of amines, Preparation of 1°-Amines, Preparation of 2° and 3°-Amines, Reactions with nitrous acid, Reactions of aryl diazonium intermediates, Elimination reactions of amines. Aldehydes and Ketones, Carboxylic acids, Carboxylic derivatives. Natural products, saccharides, Aminoacids, Biologically active compounds. Properties of aldehydes and ketones, Reversible addition reactions, Hydration and hemiacetal formation, Acetal formation, Imine formation, Enamine formation, Cyanohydrin formation, Irreversible addition reactions of complex metal hydrides, Organometallic reagents, Carbonyl group modification, Wolff-Kishner reduction Clemmensen reduction, Hydrogenolysis of thioacetals, Mechanism of electrophilic alpha-substitution, The Aldol reaction, Ambident enolate anions, Alkylation of enolate anions. Carboxylic acids, Carboxylic derivatives, Physical properties, preparation of carboxylic acids, reactions of carboxylic acids salt, Reactions of carboxylic acid derivatives, Acyl group substitution, Reductions, Metal hydride reduction, Reaction with organometallic reagents, The Claisen condensation.	

Saccharides, monosaccharides, stereochemistry of saccharides, Fischer and Haworth projection Conformation of monosaccharides, Reaction of monosaccharides, oxidation, reduction, glycosidic bond formation. Amino acids, alpha-amino acids, Reactions of amino acids, Synthesis of amino acids, Peptides and proteins, Synthesis of peptides. Nucleic Acids , Nucleosides and nucleotides, The primary structure of DNA, The secondary and tertiary structures of DNA.					
<b>Recommended literature:</b> 1. J. Clayden, N. Greeves, S. Warren, P. Wothers: Organic Chemistry, Oxford University Press, 2012. 2. Solomons T.W. Graham: Solomon's Organic Chemistry, Wiley&Sons Inc., 2017. 3. J. E. McMurry: Organic Chemistry, Cengage, 2015.					
<b>Course language:</b> english					
<b>Notes:</b>					
<b>Course assessment</b> Total number of assessed students: 58					
A	B	C	D	E	FX
67.24	25.86	5.17	0.0	1.72	0.0
<b>Provides:</b>					
<b>Date of last modification:</b> 12.01.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ KOR1/00	<b>Course name:</b> Organic reaction kinetics
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> 1. Attendance at lectures and seminars (also applies to online teaching): justified the student's absence from the two lectures / seminars will be justified by the teacher; longer term justified student non - participation in seminars must be demonstrated mastery of the curriculum student side in an alternative form determined by the teacher (eg elaboration of assignments, preparation lectures, ...) 2. Activity in seminars (also applies to the online form of teaching) - it is required to master the theory from the previous lecture 3. Elaboration of written assignments (20% of the total evaluation) according to the teacher's instructions. 4. Passing the final test (30% of the total evaluation). 5. Examination (written 25% and oral part 25%).	
<b>Learning outcomes:</b> 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.	
<b>Brief outline of the course:</b> 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.	
<b>Recommended literature:</b>	
<b>Course language:</b> english	

**Notes:**

Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.

**Course assessment**

Total number of assessed students: 16

A	B	C	D	E	FX
43.75	18.75	31.25	6.25	0.0	0.0

**Provides:** doc. RNDr. Ján Imrich, CSc.

**Date of last modification:** 28.01.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ OS/03	<b>Course name:</b> Organic synthesis
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Midterm exam. Presentation of a multistep synthesis. Final written exam, student have to receive min. 51%. A: 91-100b, B: 81-90b, C: 71-80b, D: 61-70b, E: 51-60b, FX: 0-50b.	
<b>Learning outcomes:</b> 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.	
<b>Brief outline of the course:</b> 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. Synthesis of halogenderivatives, oxygen containing organic molecules, nitrogen derivatives. Protecting groups and special synthetic techniques. Synthesis of complex molecules and natural products.	
<b>Recommended literature:</b> Carruthers W., Coldham I.: Modern Methods of Organic Synthesis, Fourth Edition, Cambridge University Press, 2005. Hanson, J. R.: Organic Synthetic Methods, The Royal Society of Chemistry 2002. Wyatt P., Warren S.: Organic Synthesis: Strategy and Control, John Wiley & Sons 2007.	
<b>Course language:</b> english	
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.	

<b>Course assessment</b>					
Total number of assessed students: 178					
A	B	C	D	E	FX
56.18	28.09	10.67	2.81	2.25	0.0
<b>Provides:</b> RNDr. Ján Elečko, PhD.					
<b>Date of last modification:</b> 28.01.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ CHOZ/18	<b>Course name:</b> Organometallic Compounds
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> 1. Active individual work in seminars. Attendance at seminars is mandatory, with the possibility of 3 absences. 2. Passing one written test (30 pts) during the semester with a success rate of min. 51%. 3. Passing a written exam (70 pts) consisting of theory and solving the practical synthetic problems with a success rate of min. 51%. A 100 pts. in total. Assessment A: 91-100; B: 81-90; C: 71-80; D: 60-71; E: 51-60; FX: 0-50 pts.	
<b>Learning outcomes:</b> The aim of the course is to clarify the position of the chemistry of organometallic compounds as the most promising interdisciplinary field of organic and inorganic chemistry.	
<b>Brief outline of the course:</b> 1. Introduction. 2. Organolithium compounds. 3. Organomagnesium compounds. 4. Organometallic compounds of copper. 5. Metallocenes chemistry. 6. Organometallic compounds of iron. 7. Organometallic compounds of cobalt. 8. Organometallic compounds of chromium. 9. Organometallic compounds of zinc, cadmium and mercury. 10. Organometallic compounds of the boron group. 11. Organoelement compounds of the carbon group. 12. Organometallic compounds of palladium. 13. Metathesis.	
<b>Recommended literature:</b> Ch. Elschenbroich, Organometallics, Wiley-VCH; 3rd ed 2016 J. F. Hartwig, Organotransition metal chemistry, University Science Books, Mill Valley, California 2010 B. D. Gupta, A. J. Elias, Basic Organometallic Chemistry, Universities Press; 2nd ed 2013 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					
<b>Course language:</b> Slovak language and English language					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 41					
A	B	C	D	E	FX
58.54	21.95	12.2	4.88	2.44	0.0
<b>Provides:</b> RNDr. Jana Špaková Raschmanová, PhD.					
<b>Date of last modification:</b> 21.12.2021					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ FAK1a/07	<b>Course name:</b> Pharmacology I
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 2 <b>Per study period:</b> 28 / 28 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b> ÚCHV/FMCH/04	
<b>Conditions for course completion:</b> Two tests, in 7th and 14th week. Test max 50 points. A student must obtain at least 51% of points from each test. Writing of the tests is mandatory. Written exam, 100 points. A student must obtain at least 51% of points. Final evaluation: A 91-100 pts, B 81-90 pts, C 71-80 pts, D 61-70 pts, E 51-60 pts, FX 0-50 pts.	
<b>Learning outcomes:</b> To provide students with a comprehensive introduction to the fundamental Pharmacology and uses of the major classes of drugs currently used in medical practice. To master the scientific methods of pharmacology, to be able to apply in a creative way to solve a wide range of problems in the field of human sciences as part of living nature.	
<b>Brief outline of the course:</b> Basic pharmacology (pharmacokinetic and pharmacodynamic principles), factors influencing drug effects, routes of drug application. Basic knowledge about the major classes of drugs currently used in medical practice.	
<b>Recommended literature:</b> 1. Whalen, K. et al.: Lippincott Illustrated Reviews: Pharmacology 7th edition, 2019. 2. Ritter, J. M. et al.: Rang & Dale's Pharmacology, 2019.	
<b>Course language:</b> english	
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.	
<b>Course assessment</b> Total number of assessed students: 12	
abs	n
100.0	0.0

<b>Provides:</b> prof. MVDr. Ján Mojžiš, DrSc.
<b>Date of last modification:</b> 11.01.2022
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice					
<b>Faculty:</b> Faculty of Science					
<b>Course ID:</b> ÚCHV/ FAK1b/07		<b>Course name:</b> Pharmacology II			
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 2 <b>Per study period:</b> 28 / 28 <b>Course method:</b> present					
<b>Number of ECTS credits:</b> 6					
<b>Recommended semester/trimester of the course:</b>					
<b>Course level:</b> II.					
<b>Prerequisites:</b> ÚCHV/FAK1a/07					
<b>Conditions for course completion:</b> Two tests, in 7th and 14th week. Test max 50 points. A student must obtain at least 51% of points from each test. Writing of the tests is mandatory. Written exam, 100 points. A student must obtain at least 51% of points. Final evaluation: A 91-100 pts, B 81-90 pts, C 71-80 pts, D 61-70 pts, E 51-60 pts, FX 0-50 pts.					
<b>Learning outcomes:</b> To provide students with a comprehensive introduction to the fundamental Pharmacology and uses of the major classes of drugs currently used in medical practice. To master the scientific methods of pharmacology, to be able to apply in a creative way to solve a wide range of problems in the field of human sciences as part of living nature.					
<b>Brief outline of the course:</b> Basic knowledge about the major classes of drugs currently used in medical practice. Detailed knowledge about drugs used to treat cancer diseases					
<b>Recommended literature:</b> 1. Whalen, K. et al.: Lippincott Illustrated Reviews: Pharmacology 7th edition, 2019. 2. Ritter, J. M. et al.: Rang & Dale's Pharmacology, 2019.					
<b>Course language:</b> english					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 9					
A	B	C	D	E	FX
0.0	11.11	33.33	11.11	44.44	0.0
<b>Provides:</b> prof. MVDr. Ján Mojžiš, DrSc.					

<b>Date of last modification:</b> 11.01.2022
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> KPPaPZ/PPZMg/12	<b>Course name:</b> Psychology and Health Psychology (Master's Study)
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 1 / 2 <b>Per study period:</b> 14 / 28 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Conditions for the continuous assessment during the semester: Active work (maximum 5 points, 2 absences are allowed). Preparation, presentation and discussion on a selected topic - max. 15 points. Written examination (maximum 30 points). Conditions for admission to the exam: min. 25 points. Conditions for the final assessment: Exam: written form (max. 50 points, min. 25 points) Conditions for successful completion of the course: participation in lessons, fulfillment of assignments and at least 66 points from the overall evaluation. Detailed information in the electronic bulletin board of the course in AIS2. The teaching of the subject will be realized by a combined method.	
<b>Learning outcomes:</b> The student will understand the basic concepts and theories of health psychology, can explain salutogenic factors as well as the consequences of risk behavior related to health. He is able to apply the knowledge especially in the field of prevention of burnout syndrome and support of mental health in the work of a teacher.	
<b>Brief outline of the course:</b> 1 Introduction to health psychology 2 Psychoimmunology 3 Personality factors and health 4 Social support as a protective factor in relation to health 5 Subjective well-being 6 Stress and stressful situations and ways to manage them 7 Burnout syndrome 8 Health-promoting behavior, mental hygiene 9 Health risk behavior 10 School as an important factor of health	
<b>Recommended literature:</b> Křivohlavý, J.: Psychologie zdraví. Portál, Praha 2001.	

Křivohlavý, J.: Psychologie nemoci. Grada, Praha, 2002.  
 Křivohlavý, J.: Psychologie moudrosti a dobrého života. Grada, Praha, 2009.  
 Kebza, V.: Psychosociální determinanty zdraví. Academia, Praha 2005.  
 Kahneman, D., Diener, E., Schwarz, N.(Eds), Well-Being. The Foundations of Hedonic Psychology. New York, Russell Sage Foundation, 2003.  
 Kaplan, R. M.: Zdravie a správanie človeka. SPN, Bratislava 1996.  
 Sarafino, E. P.: Health Psychology. Biopsychosocial interactions. John Wiley and sons 1994.  
 Baštecký, J., Šavlík, J., Šimek, J. 1993. Psychosomatická medicína. Praha: Grada  
 Tress, W., Krusse, J., Ott, J.: Základní psychosomatická péče. Portál, Praha 2008.

**Course language:**

slovak

**Notes:**

**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 Barbierik, PhD.

**Date of last modification:** 07.07.2021

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ KOC1/01	<b>Course name:</b> Quantum Chemistry
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 3 / 1 <b>Per study period:</b> 42 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> The examination can consist of written and/or oral examination as the examiner may determine. In order to pass this course, each student must complete ALL of the following compulsory requirements: Students may only miss 1 practise session. Students must obtain at least 51 percent of the total number of points of the written examination. The final evaluation is assigned on the basis of the mark of the written examination. Students are assigned a grade in the course as follows: 100 - 91% (A), 90 - 81% (B), 80 - 71% (C), 70 - 61% (D), 60 - 51% (E), 50% and less FX.	
<b>Learning outcomes:</b> 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.).	
<b>Brief outline of the course:</b> Historical overview of quantum mechanics. Operators in quantum mechanics. Axioms of quantum mechanics. Introduction to the theory of chemical bonding. Time-independent Schrodinger equation. Induction and formulation of the Schrodinger equation for a particle in a one-dimensional potential well and in a simple harmonic motion. Induction of the Schrodinger equation for a hydrogen atom and a molecular hydrogen ion. Examples of solving the Schrodinger equation for a free particle and a particle in a potential well, and its consequences. Examples of solutions of the Schrodinger equation for harmonic oscillator, rigid rotor and hydrogen atom. Electron spin. Approximate methods for solving the Schrodinger equation. Multielectron atoms and Pauli's principle. Hartree and Hartree-Fock method. Periodic law from the point of view of quantum theory. Quantum theory of molecules. Basic approximations in the theory of chemical bonding. Movement of atoms in molecules. Electronic structure of molecules. Ab initio methods. Density functional theory. Semiempirical approach. Properties of molecules. Intermolecular interactions. Modeling of liquid phase and solutions. Electronic exit states. Chemical reactivity. Relativistic effects. Quantum chemistry in practice.	
<b>Recommended literature:</b> 1. Zahradník R., Polák R.: Základy kvantové chemie, TKI, SNTL Praha 1976 2. Polák R., Zahradník R.: Kvantová chemie, SNTL Praha 1985 3. Remko M.: Molekulové modelovanie, SAP, Bratislava 2000	

4. Jensen F. : Introduction to Computational Chemistry, Wiley, 2000 5. Kvantová chemie: První čtení. Petr Slaviček, Eva Muchová, Daniel Hollas, Vít Svoboda, Ondřej Svoboda. VSCHT Praha 2014 - 2019.					
<b>Course language:</b> slovak language and english language					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams platform. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously. Teaching will take place if at least 5 students are enrolled in the course.					
<b>Course assessment</b> Total number of assessed students: 32					
A	B	C	D	E	FX
81.25	15.63	3.13	0.0	0.0	0.0
<b>Provides:</b> doc. RNDr. Ladislav Janovec, PhD.					
<b>Date of last modification:</b> 11.08.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚTVŠ/ ÚTVŠ/CM/13	<b>Course name:</b> Seaside Aerobic Exercise
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week: 2 Per study period: 28</b> <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> I., II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Completion: passed Condition for successful course completion: - active participation in line with the study rule of procedure and course guidelines - effective performance of all tasks- aerobics, water exercise, yoga, Pilates and others	
<b>Learning outcomes:</b> Content standard: The student demonstrates relevant knowledge and skills in the field, which content is defined in the course syllabus and recommended literature. Performance standard: Upon completion of the course students are able to meet the performance standard and: - perform basic aerobics steps and basics of health exercises, - conduct verbal and non-verbal communication with clients during exercise, - organise and manage the process of physical recreation in leisure time	
<b>Brief outline of the course:</b> Brief outline of the course: 1. Basic aerobics – low impact aerobics, high impact aerobics, basic steps and cuing 2. Basics of aqua fitness 3. Basics of Pilates 4. Health exercises 5. Bodyweight exercises 6. Swimming 7. Relaxing yoga exercises 8. Power yoga 9. Yoga relaxation 10. Final assessment Students can engage in different sport activities offered by the sea resort – swimming, rafting, volleyball, football, table tennis, tennis and other water sports in particular.	
<b>Recommended literature:</b> 1. BUZKOVÁ, K. 2006. Fitness jóga. Praha: Grada. 167 s.	

2. ČECHOVSKÁ, I., MILEROVÁ, H., NOVOTNÁ, V. Aqua-fitness. Praha: Grada. 136 s. 3. EVANS, M., HUDSON, J., TUCKER, P. 2001. Umění harmonie: meditace, jóga, tai-či, strečink. 192 s. 4. JARKOVSKÁ, H., JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. 209 s. 5. KOVAŘÍKOVÁ, K. 2017. Aerobik a fitness. Karolium, 130 s.	
<b>Course language:</b> Slovak language	
<b>Notes:</b>	
<b>Course assessment</b> Total number of assessed students: 54	
abs	n
11.11	88.89
<b>Provides:</b> Mgr. Agata Dorota Horbacz, PhD.	
<b>Date of last modification:</b> 29.03.2022	
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/SEP1/15	<b>Course name:</b> Semestral Project 1
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 6 <b>Per study period:</b> 84 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Notification any thesis adversed by choosen department. Semester experimental work with master degree thesis.	
<b>Learning outcomes:</b> Semester scientific thesis.	
<b>Brief outline of the course:</b> Experimental work in research field for master degree . Evaluation of results and verbal presentation and discussion about.	
<b>Recommended literature:</b> Recent journal references.	
<b>Course language:</b> english	
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BigBlueButton tools. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.	
<b>Course assessment</b> Total number of assessed students: 68	
abs	n
98.53	1.47
<b>Provides:</b> 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., RNDr. Monika Tvrdoňová, PhD., RNDr. Kvetoslava Stanková, PhD., RNDr. Ján Elečko, PhD., RNDr. Mariana Budovská, PhD., doc. RNDr. Ladislav Janovec, PhD., RNDr. Slávka Hamuláková, PhD., RNDr. Jana Špaková Raschmanová, PhD., doc. RNDr. Mária Vilková, PhD.	
<b>Date of last modification:</b> 07.11.2022	

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ SEP2/15	<b>Course name:</b> Semestral Project 2
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 6 <b>Per study period:</b> 84 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 6	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Notification any thesis adversed by choosen department. Semester experimental work with master degree thesis.	
<b>Learning outcomes:</b> Semester scientific thesis.	
<b>Brief outline of the course:</b> Experimental work in research field for master degree . Evaluation of results and verbal presentation and discussion about.	
<b>Recommended literature:</b> Recent journal references. Chemical on-line databases.	
<b>Course language:</b> english	
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BigBlueButton tools. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.	
<b>Course assessment</b> Total number of assessed students: 67	
abs	n
100.0	0.0
<b>Provides:</b> 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., RNDr. Monika Tvrdoňová, PhD., RNDr. Kvetoslava Stanková, PhD., RNDr. Ján Elečko, PhD., RNDr. Mariana Budovská, PhD., RNDr. Slávka Hamuľáková, PhD., doc. RNDr. Ladislav Janovec, PhD., RNDr. Jana Špaková Raschmanová, PhD., doc. RNDr. Mária Vilková, PhD.	

<b>Date of last modification:</b> 07.11.2022
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice		
<b>Faculty:</b> Faculty of Science		
<b>Course ID:</b> KPPaPZ/SPVKE/07	<b>Course name:</b> Social-Psychological Training of Coping with Critical Life Situations	
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present		
<b>Number of ECTS credits:</b> 2		
<b>Recommended semester/trimester of the course:</b> 2.		
<b>Course level:</b> II.		
<b>Prerequisites:</b>		
<b>Conditions for course completion:</b>		
<b>Learning outcomes:</b>		
<b>Brief outline of the course:</b>		
<b>Recommended literature:</b>		
<b>Course language:</b>		
<b>Notes:</b>		
<b>Course assessment</b> Total number of assessed students: 126		
abs	n	z
97.62	2.38	0.0
<b>Provides:</b> Mgr. Ondrej Kalina, PhD.		
<b>Date of last modification:</b> 24.06.2022		
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.		

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚTVŠ/ TVa/11	<b>Course name:</b> Sports Activities I.
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 2	
<b>Recommended semester/trimester of the course:</b> 1.	
<b>Course level:</b> I., I.II., II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Min. 80% of active participation in classes.	
<b>Learning outcomes:</b> Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.	
<b>Brief outline of the course:</b> Brief outline of the course: Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.	
<b>Recommended literature:</b> BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: <a href="https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571">https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571</a> BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252. JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308. KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.	

KRESTA, J. 2009. Futsal. Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.  
 LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.  
 SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.  
 STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.  
 VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

**Course language:**  
 Slovak language

**Notes:**

**Course assessment**

Total number of assessed students: 14548

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
86.46	0.07	0.0	0.0	0.0	0.05	8.41	5.02

**Provides:** Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., MPH, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Marcel Čurgali, Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., MUDr. Peter Dombrovský

**Date of last modification:** 29.03.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚTVŠ/ TVb/11	<b>Course name:</b> Sports Activities II.
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 2	
<b>Recommended semester/trimester of the course:</b> 2.	
<b>Course level:</b> I., I.II., II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> active participation in classes - min. 80%.	
<b>Learning outcomes:</b> Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.	
<b>Brief outline of the course:</b> Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.	
<b>Recommended literature:</b> BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: <a href="https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571">https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571</a> BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252. JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308. KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027. KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.	

LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.  
 SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.  
 STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.  
 VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

**Course language:**

Slovak language

**Notes:**

**Course assessment**

Total number of assessed students: 13211

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
84.35	0.51	0.02	0.0	0.0	0.05	10.78	4.29

**Provides:** Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., MPH, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Marcel Čurgali, Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., MUDr. Peter Dombrovský

**Date of last modification:** 29.03.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚTVŠ/ TVc/11	<b>Course name:</b> Sports Activities III.
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 2	
<b>Recommended semester/trimester of the course:</b> 3.	
<b>Course level:</b> I., I.II., II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> min. 80% of active participation in classes	
<b>Learning outcomes:</b> Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.	
<b>Brief outline of the course:</b> Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.	
<b>Recommended literature:</b> BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: <a href="https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571">https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571</a> BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252. JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308. KAČÁNI, L. 2002. Futbal:Trénink hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027. KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.	

LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.  
 SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.  
 STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.  
 VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

**Course language:**

Slovak language

**Notes:**

**Course assessment**

Total number of assessed students: 8879

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
88.62	0.07	0.01	0.0	0.0	0.02	4.25	7.03

**Provides:** Mgr. Marcel Čurgali, Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., MPH, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., MUDr. Peter Dombrovský

**Date of last modification:** 29.03.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚTVŠ/ TVd/11	<b>Course name:</b> Sports Activities IV.
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 2	
<b>Recommended semester/trimester of the course:</b> 4.	
<b>Course level:</b> I., I.II., II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> min. 80% of active participation in classes	
<b>Learning outcomes:</b> Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.	
<b>Brief outline of the course:</b> Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess. In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness. In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.	
<b>Recommended literature:</b> BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: <a href="https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571">https://www.ff.umb.sk/app/cmsFile.php?disposition=a&amp;ID=571</a> BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252. JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308. KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027. KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.	

LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.  
 SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.  
 STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.  
 VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

**Course language:**

Slovak language

**Notes:**

**Course assessment**

Total number of assessed students: 5628

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
82.66	0.28	0.04	0.0	0.0	0.0	8.05	8.97

**Provides:** Mgr. Marcel Čurgali, Mgr. Agata Dorota Horbacz, PhD., Mgr. Dávid Kaško, PhD., Mgr. Zuzana Küchelová, PhD., doc. PaedDr. Ivan Uher, PhD., MPH, prof. RNDr. Stanislav Vokál, DrSc., Mgr. Patrik Berta, Mgr. Ladislav Kručanica, PhD., Mgr. Richard Melichar, Mgr. Petra Tomková, PhD., MUDr. Peter Dombrovský

**Date of last modification:** 29.03.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ STRE/09	<b>Course name:</b> Structure and Reactivity in Organic Chemistry
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> 1. Active participation in seminars (theoretical preparation is required). 2. Two credit reports with a total of 100 b (each test: max. 50 points, min. 26 points). 3. The exam is a test (2 tests – 1st part of lectures, 2nd part of lectures) with a total of 100 points (each test: max. 50 points, min. 26 points). The points for the interim assessment are added to the points obtained in the exam.	
<b>Learning outcomes:</b> Students will have new knowledge about the structure, properties and mechanisms of organic reactions, considering that in several areas there have been revolutionary changes of opinion on the course, or reaction mechanism. From the large amount of information derived from structural formulas, students should be able to assess the effect of the nature and structure of a given compound on the reactivity of different structural types of compounds.	
<b>Brief outline of the course:</b> 1. Binding 2. Structure 3. Reactivity 4. Reaction intermediates 5. Acidity and basicity 6. Nukleophilic substitution 7. Addition reactions 8. Elimination reactions 9. Aromatic substitution 10. Addition-elimination reactions 11. Radical reactions 12. Pericyclic reactions	
<b>Recommended literature:</b> 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.	

<b>Course language:</b> Slovak language and english language.					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 81					
A	B	C	D	E	FX
41.98	33.33	17.28	4.94	2.47	0.0
<b>Provides:</b> RNDr. Slávka Hamuláková, PhD., doc. RNDr. Mária Vilková, PhD.					
<b>Date of last modification:</b> 15.08.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ SVK1/00	<b>Course name:</b> Students Scientific Conference (Presentation)
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Notes:</b>	
<b>Course assessment</b> Total number of assessed students: 26	
abs	n
100.0	0.0
<b>Provides:</b> prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., prof. Dr. Yaroslav Bazel', DrSc.	
<b>Date of last modification:</b> 01.12.2021	
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚTVŠ/ LKSp/13	<b>Course name:</b> Summer Course-Rafting of TISA River
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week: 2 Per study period: 28</b> <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> I., II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Completion: passed Condition for successful course completion: - active participation in line with the study rule of procedure and course guidelines - effective performance of all tasks: carrying a canoe, entering and exiting a canoe, righting a canoe, paddling	
<b>Learning outcomes:</b> Content standard: The student demonstrates relevant knowledge and skills in the field, which content is defined in the course syllabus and recommended literature. Performance standard: Upon completion of the course students are able to meet the performance standard and: - implement the acquired knowledge in different situations and practice, - implement basic skills to manipulate a canoe on a waterway, - determine the right spot for camping, - prepare a suitable material and equipment for camping.	
<b>Brief outline of the course:</b> Brief outline of the course: 1. Assessment of difficulty of waterways 2. Safety rules for rafting 3. Setting up a crew 4. Practical skills training using an empty canoe 5. Canoe lifting and carrying 6. Putting the canoe in the water without a shore contact 7. Getting in the canoe 8. Exiting the canoe 9. Taking the canoe out of the water 10. Steering a) The pry stroke (on fast waterways) b) The draw stroke	

11. Capsizing 12. Commands	
<b>Recommended literature:</b> 1. JUNGER, J. et al. Turistika a športy v prírode. Prešov: FHPV PU v Prešove. 2002. ISBN 8080680973. Internetové zdroje: 1. STEJSKAL, T. Vodná turistika. Prešov: PU v Prešove. 1999. Dostupné na: <a href="https://ulozto.sk/tamhle/UkyxQ2lYF8qh/name/Nahrane-7-5-2021-v-14-46-39#!ZGDjBGR2AQtkAzVkAzLkLJWuLwWxZ2ukBRLjnGqSomICMmOyZN==">https://ulozto.sk/tamhle/UkyxQ2lYF8qh/name/Nahrane-7-5-2021-v-14-46-39#!ZGDjBGR2AQtkAzVkAzLkLJWuLwWxZ2ukBRLjnGqSomICMmOyZN==</a>	
<b>Course language:</b> Slovak language	
<b>Notes:</b>	
<b>Course assessment</b> Total number of assessed students: 209	
abs	n
37.32	62.68
<b>Provides:</b> Mgr. Dávid Kaško, PhD.	
<b>Date of last modification:</b> 29.03.2022	
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ SMCH/03	<b>Course name:</b> Supramolecular chemistry
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Presentation of a chosen topic. Final written exam, min 51%. A: 91-100% B: 81-90% C: 71-80% D: 61-70% E: 51-60% FX: 0-50%	
<b>Learning outcomes:</b> Study of interactions between molecules and their arrangement into complexes which are the basic of most of biochemic systems and modern materials.	
<b>Brief outline of the course:</b> Definition and history of supramolecular chemistry. Basics – receptors, recognition, coordination, complementarity, lock-key principle. Nature of interactions in supramolecular chemistry. Supramolecular chemistry in nature. Rhodopsin and bacteriorhodopsin – light as information and energy source. Porphyrins, DNA. Crown ethers, podands, cryptands, spherands, cyclophanes, proton and hydrid sponges. Selectivity and complementarity. Interactions with solvent. Macrocyclic and template effect. Receptors for neutral molecules. Clatrates and intercalates. Cyclodextrines, calyxarenes. Molecular tweezers. Cavities and cages. Fullerenes as host and guest. Modifications of fullerenes. Nanotubes. Analytical methods in supramolecular chemistry. NMR – NOE and more-dimensional experiments, time-depending NMR. Supramolecular catalysis and transport. Proximity effect. Self-organization and recognition in catalysis. Active transport – cation and anion carriers, molecular pumps. Passive transport – transmembrane channels. Self-organization. Formation of discrete geometric structures and capsules as result of multiple components interactions. Template synthesis. Catenanes, rotaxanes and helicates. Programable supramolecular systems. Micelles and double-layers. Dendrimers. Crystal engineering. Synthesis of crystals and co-crystals on basis of non-covalent interactions of certain molecules and prediction of their structure. Effect of additives on growing and structure of crystals. Enantiospecific synthesis in crystals. Liquid crystals.	
<b>Recommended literature:</b>	

1. Lecture handouts can be found at <a href="http://lms.upjs.sk/course/view.php?id=385">http://lms.upjs.sk/course/view.php?id=385</a> 2. J.W.Steed and J.L.Atwood, Supramolecular chemistry, Wiley : Chichester, 2000. 3. F.Vogtle, Supramolecular chemistry: an introduction, Wiley : Chichester, 1991. 4. J. W. Steed: Supramolecular chemistry, John Wiley and Sons. Ltd. 2009.					
<b>Course language:</b> english					
<b>Notes:</b> Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.					
<b>Course assessment</b> Total number of assessed students: 73					
A	B	C	D	E	FX
65.75	20.55	10.96	1.37	1.37	0.0
<b>Provides:</b> RNDr. Martin Walko, PhD.					
<b>Date of last modification:</b> 28.01.2022					
<b>Approved:</b> doc. RNDr. Miroslava Martinková, PhD.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ TOXOL/18	<b>Course name:</b> Toxicology of Organic Compounds
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 / 1 <b>Per study period:</b> 28 / 14 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Seminar written report on the selected topic of this subject and its oral presentation connected with the discussion. Terminal examination by the written form. The written part is evaluated as follows: 100-91% of points = A, 90-81% of points = B, 80- 71% of points = C, 70-61% = D, 60-51% of points = E, 50% and less = FX. A student must obtain at least 51% of points.	
<b>Learning outcomes:</b> The study of interactions between chemicals and biological systems in order to determine the potential of organic compounds to produce the harmful effects in the living organisms.	
<b>Brief outline of the course:</b> General principles of toxicology, definition of xenobiotics, toxic effects, local and systemic toxicity. Toxicokinetic, absorption, distribution, biotransformation and excretion of xenobiotics and their metabolites. Biotransformation of xenobiotics. Phase I Reactions (oxidation, reduction, hydrolysis), characterization of enzymes. Phase II reactions - glucuronidation, sulfatation, methylation, acetylation, amino acid conjugation, glutathione conjugation. Toxication versus detoxication, general principles, toxic intermediates and their detoxication. Biotransformation of organic solvents and their toxic effects, toxic effects of natural products of microorganisms, fungi, plants and some animals. Drug dependence, the general principles and mechanisms.	
<b>Recommended literature:</b> 1. C. D. Laassen: Toxicology: The basic science of poisons, McGraw-Hill Companies, Inc. 2001. ISBN: 0071347216. 2. K. Faber: Biotransformation in Organic Chemistry, Springer International Publishing 2018, ISBN 3319615890. 3. H. Lüllmann, K. Mohr, M. Wehling: Farmakologie a toxilokogie, Grada 2004, ISBN80-247-0836-1.	
<b>Course language:</b> english	
<b>Notes:</b>	

Teaching is carried out in person or, if necessary, online using the BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.

**Course assessment**

Total number of assessed students: 25

A	B	C	D	E	FX
64.0	24.0	4.0	4.0	4.0	0.0

**Provides:** doc. RNDr. Miroslava Martinková, PhD.

**Date of last modification:** 20.12.2021

**Approved:** doc. RNDr. Miroslava Martinková, PhD.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚCHV/ USOL/09	<b>Course name:</b> Určovanie štruktúry organických zlúčenín
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 0 / 2 <b>Per study period:</b> 0 / 28 <b>Course method:</b> present	
<b>Number of ECTS credits:</b> 3	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> II.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> 1. Attendance at seminars (this also applies to the online form of teaching): justified student non-participation in two seminars will be justified by the teacher; longer-term justified non-participation of the student in seminars must be demonstrated mastery of the curriculum by the student in an alternative form determined by the teacher (eg elaboration of assignments, preparation of a lecture, ...) 2. Activity at seminars (also applies to the online form of teaching) - theoretical preparation of students for all seminars is required 3. Elaboration of written assignments (50% of the total evaluation) according to the instructions of the teacher through the e-learning portal LMS Moodle. 4. Passing the final test through the e-learning portal LMS Moodle (50% of the total evaluation).	
<b>Learning outcomes:</b> The aim of the course is to gain theoretical knowledge and practical skills to solve the NMR spectra of small organic molecules. Emphasis is placed on successfully managing the work in the MNova program.	
<b>Brief outline of the course:</b> 1. Introduction to NMR 2. Assignment of $^1\text{H}$ and $^{13}\text{C}$ NMR chemical shifts to atoms of known structure 3. Homonuclear spin-spin (scalar) coupling constants 4. Chemical and magnetic equivalence, topics 5. Spin systems 6. Heteronuclear interactions H-D, C-D 7. Heteronuclear coupling constants H-C, H-N 8. Nuclear Overhauser effect 9. Relaxation 10. NMR of carbohydrates 11. $^{19}\text{F}$ NMR 12. $^{15}\text{N}$ NMR 13. $^{31}\text{P}$ NMR 14. Spectrum processing by MNova program	

**Recommended literature:**

1. E. Pretsch, P. Bühlmann, C. Affolter: Structure Determination of Organic Compounds: Tables of Spectral Data.
2. J. H. Simpson: Organic Structure Determination Using 2D NMR Spectroscopy, 2012, Academic Press, Massachusetts USA.
3. Prednášky na e-learningovom portáli LMS Moodle.

**Course language:**

english

**Notes:**

The capacity of the course is given by the capacity of the room RB0C08 (max. 18 students). Teaching is carried out in person or, if necessary, online using the MS Teams or BBB (BigBlueButton) tool. The form of teaching is specified by the teacher at the beginning of the semester, updated continuously.

**Course assessment**

Total number of assessed students: 100

abs	n
100.0	0.0

**Provides:** doc. RNDr. Mária Vilková, PhD.

**Date of last modification:** 28.01.2022

**Approved:** doc. RNDr. Miroslava Martinková, PhD.