CONTENT

COURSE INFORMATION LETTER

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

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
1. Attendance at lectures and seminars (this also applies to the online form of teaching)
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 (20% of the total evaluation) according to the teacher's instructions.
4. Passing the final test (30% of the total evaluation).
5. Exam (written 25% and oral part 25%).

Learning outcomes:
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.

Brief outline of the course:
1. Advanced 1D NMR methods
a) 13C NMR experiments – APT, DEPT
b) NOE experiments
c) Selective experiments
2. 2D NMR methods
a) Proton-proton correlation through coupling – COSY, TOCSY
b) Proton-proton correlation through space - NOESY
c) Proton-carbon correlation – HSQC/HMQC/HETCOR, HMBC, H2BC, EXSIDE
d) Carbon-carbon correlation - INADEQUATE

Recommended literature:
1. H. Friebolin: Basic One- and Two-Dimensional NMR Spectrocopy, 5. Ed., Wiley, 2010.
2. T. D. W. Claridge: High-Resolution NMR Techniques in Organic Chemistry, 5. Ed., Elsevier, 2016.
3. Atta-ur-Rahman, M. I. Choudhary: Solving Problems with NMR spectroscopy, Academic Press 1996.

Course language:
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: 193

A	B	C	D	E	FX
40.41	25.39	23.83	8.81	1.55	0.0

Provides: doc. RNDr. Mária Vilková, PhD.

Date of last modification: 28.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 5

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
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.

Learning outcomes:
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.

Brief outline of the course:
Chiral substrate, chiral auxiliaries and catalysts, kinetic and thermodynamic resolution, double asymmetric induction, Cram, Carabatsos a Felkin-Ahn model, chelatation 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 sulfooxidation, 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.

Recommended literature:
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: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, prof. Mgr. Radovan Šebesta, DrSc., RNDr. Slávka Hamuľaková, PhD., univerzitná docentka

Date of last modification: 04.08.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ ZCI/04	**Course name:** Basic cheminformatics tools

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
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.

Learning outcomes:
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.

Brief outline of the course:
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.
1. Basic terms.
2. Phys.-chem calculations properties of the compounds.
3. Experimental sources phys.-chem. properties of the compounds.
4. Description of 2D and 3D structures and manipulation with them.
5. Databases, storage of chemical information.
6. Structural search.
7. Structural search - similarity and diversity at the molecular level.
8. Molecular descriptors.

9. Relationship between structure and properties.
10. Combinatorial chemistry.
11. HTS, virtual screening - data mining.

Recommended literature:

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.

Course language:
slovak language, english language

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: 0

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

Provides: RNDr. Monika Tvrdoňová, PhD.

Date of last modification: 04.08.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BOC/18	**Course name:** Bioorganic Chemistry

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

Number of ECTS credits: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
1. Individual work and activity in seminars.
2. Passing a written exam with a success rate of min. 51%.

Learning outcomes:
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.

Brief outline of the course:

Recommended literature:
H. Dugas: Bioorganic Chemistry, Wiley, London 1995.

Course language:
Slovak language

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: 28

A	B	C	D	E	FX
53.57	28.57	3.57	14.29	0.0	0.0

Provides: doc. RNDr. Ladislav Janovec, PhD., RNDr. Jana Špaková Raschmanová, PhD.

Date of last modification: 21.12.2021

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 4

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
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.

Learning outcomes:
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.

Brief outline of the course:
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.

Recommended literature:

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. Monika Tvrdoňová, PhD.

Date of last modification: 04.08.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/PRL/18	**Course name:** Chemistry of Natural Compounds

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

Number of ECTS credits: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
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.

Learning outcomes:
General review on the selected groups of natural products, especially secondary metabolites such as alkaloids and terpenoids and their biosynthetic pathways.

Brief outline of the course:
Primary and secondary metabolism. Secondary metabolites an their building blocks. Biosyntheis 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.

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

Course language:
english

Notes:
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: 27

A	B	C	D	E	FX
55.56	22.22	14.81	3.7	3.7	0.0

Provides: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

Date of last modification: 20.12.2021

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ ROP/15	**Course name:** Class Project

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 4.

Course level: II.

Prerequisities:

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

Learning outcomes:
Project work and presentation.

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

Recommended literature:
Recent journal references.
Chemical on-line databases.

Course language:
english

Notes:
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.

Course assessment
Total number of assessed students: 68

abs	n
100.0	0.0

Provides: prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Andrea Morovská Turoňová, PhD., doc. RNDr. Andrea Straková Fedorková, PhD., doc. RNDr. Ladislav Janovec, PhD., RNDr. Ján Elečko, PhD., RNDr. Jana Špaková Raschmanová, PhD., RNDr. Monika Tvrdoňová, PhD., RNDr. Mariana Budovská, PhD., univerzitná docentka, RNDr. Slávka Hamuľaková, PhD., univerzitná docentka, doc. RNDr. Mária Vilková, PhD., RNDr. Zuzana Kudličková, PhD., doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

Date of last modification: 07.11.2022
Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/KK/07	**Course name:** Communication and Cooperation

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities:

Conditions for course completion:
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.

Learning outcomes:
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.

Brief outline of the course:
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)

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 281

abs	n	z
98.22	1.78	0.0

Provides: Mgr. Ondrej Kalina, PhD., Mgr. Lucia Barbierik, PhD.

Date of last modification: 31.07.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ KC/03	**Course name:** Cosmetic chemistry

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

Number of ECTS credits: 4

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

Course level: II.

Prerequisities:

Conditions for course completion:
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.

Learning outcomes:
The basic chemical ingredients in cosmetic products, their isolation from natural sources. The construction of some interesting groups of the orgnaic structures and their application in cosmetic industry.

Brief outline of the course:
Skin and its components. The chemistry of lipids. Lipids, their classification (triacylglycerols, glycerophospholipids and sfingophoslipids), liposomes as transport systems. Fatty acids and alcohols, natural and synthetic waxes. Surfactants, their classification. Antioxidants. Dyes, their classification, organic and inorganic dyes, natural and synthetic. Biological active compounds (amino acids, peptides, proteins hydroxy acids, vitamins, polysaccharides) as the cosmetic ingredients. The chemistry of fragrances. Compounds derived from shikimic acid and mevalonic acid, their biosynthesis, Synthetic fragrances and their construction.

Recommended literature:
1. S. V. Bhat, B. A. Nagasampagi, M. Sivakumar: Chemistry of Natural Products, Springer Narosa 2005, ISBN 81-7319-481-5.
2. G. Ohloff: Scent and Fragrances, Springer-Verlag Berlín Heidelberg 1994, ISBN 3-540-57108-6.
3. D. H. Pybus, CH. S. Sell: The chemistry of fragrances, Royal Society of Chemistry 1999, ISBN 0-8540-528-7.
4. 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 Eddition, ISBN 0534389996.

Course language:

slovak, english

Notes:
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: 86

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

Provides: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

Date of last modification: 28.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 16

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 63

A	B	C	D	E	FX
87.3	6.35	3.17	1.59	1.59	0.0

Provides:

Date of last modification: 26.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ SEM1a/00	**Course name:** Diploma work seminar
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course: 1.	
Course level: II.	
Prerequisities:	
Conditions for course completion: 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 evalution is individual, based on the assessment of the quality of provided material by the supervisor.	
Learning outcomes: 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).	
Brief outline of the course: 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).	
Recommended literature: The recommended literature will be assigned by the supervisor of the master's thesis.	
Course language: slovak, 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: 122

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

Provides: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, RNDr. Slávka Hamuľaková, PhD., univerzitná docentka, RNDr. Mariana Budovská, PhD., univerzitná docentka, RNDr. Ján Elečko, PhD., RNDr. Jana Špaková Raschmanová, PhD., RNDr. Monika Tvrdoňová, PhD., doc. RNDr. Ladislav Janovec, PhD., doc. RNDr. Mária Vilková, PhD., RNDr. Zuzana Kudličková, PhD.

Date of last modification: 10.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities: ÚCHV/SEM1a/00

Conditions for course completion:
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.

Learning outcomes:
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.

Brief outline of the course:
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.

Recommended literature:
The recommended literature will be defined and provided by the supervisor of the master's thesis and will relate to the assigned scientific thesis.

Course language:
slovak, 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: 106

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

Provides: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, RNDr. Mariana Budovská, PhD., univerzitná docentka, RNDr. Slávka Hamuľaková, PhD., univerzitná docentka, RNDr. Ján Elečko, PhD., RNDr. Jana Špaková Raschmanová, PhD., RNDr. Monika Tvrdoňová, PhD., doc. RNDr. Ladislav Janovec, PhD., doc. RNDr. Mária Vilková, PhD., RNDr. Zuzana Kudličková, PhD.
Date of last modification: 10.01.2022
Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ EMDP/03	**Course name:** Experimental Methods to Master´s Thesis

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

Number of ECTS credits: 6

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

Course level: II.

Prerequisities:

Conditions for course completion:
The supervisor of the diploma thesis evaluates the student's experimental work individually every week and at the end of the semester.

Learning outcomes:
Acquisition of experimental methods necessary for the successful solution of the diploma thesis.

Brief outline of the course:
Technique of experimental methods, including the use of devices needed to solve the thesis. The use of experimental instrumentation techniques in the elaboration of a diploma thesis, focusing on work with spectral and chromatographic methods used in the characterization of the structure of synthesized organic compounds. Practical application of these methods.

Recommended literature:
Current journal literature. Chemical online databases.

Course language:
Slovak, english

Notes:
Teaching is carried out full-time or part-time, using the BBB platform (BigBlueButton) or MS Teams. The form of teaching is specified by the teacher at the beginning of the semester and continuously updated.

Course assessment
Total number of assessed students: 421

A	B	C	D	E	FX
94.3	3.56	0.95	0.48	0.71	0.0

Provides: prof. RNDr. Mária Kožurková, CSc., doc. RNDr. Taťána Gondová, CSc., doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, prof. RNDr. Erik Sedlák, DrSc., doc. RNDr. Viktor Víglaský, PhD., doc. RNDr. Katarína Reiffová, PhD., RNDr. Nataša Tomášková, PhD., RNDr. Slávka Hamuľaková, PhD., univerzitná docentka, doc. RNDr. Rastislav Varhač, PhD., RNDr. Danica Sabolová, PhD., univerzitná docentka, prof. Mgr. Vasiľ Andruch, DSc., prof. Dr.

Yaroslav Bazeľ, DrSc., doc. RNDr. Ladislav Janovec, PhD., doc. Ing. Viera Vojteková, PhD., RNDr. Mariana Budovská, PhD., univerzitná docentka, doc. RNDr. Mária Vilková, PhD., RNDr. Monika Tvrdoňová, PhD., RNDr. Ján Elečko, PhD., RNDr. Jana Špaková Raschmanová, PhD., RNDr. Zuzana Kudličková, PhD., RNDr. Rastislav Serbin, PhD., RNDr. Jana Šandrejová, PhD., univerzitná docentka
Date of last modification: 25.01.2022
Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 4

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

Course level: I., II.

Prerequisities:

Conditions for course completion:
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.

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

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

Recommended literature:

Course language:
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: 316

A	B	C	D	E	FX
68.04	27.53	4.11	0.0	0.0	0.32

Provides: RNDr. Ján Elečko, PhD.

Date of last modification: 28.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 4

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

Course level: II.

Prerequisities:

Conditions for course completion:
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.

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

Brief outline of the course:
Preparation and propertieis of various types of heterocycles. Attention will be paid to aromatic and non-aromatic compounds, including their biological properties and application in organic synthesis. Natural compounds containing heterocycles, biological activity and drugs on the base of heterocycles and their synthesis.
1. Introduction, nomenclature of heterocycles
2. Six-membered heterocycles with one heteroatom (pyridine, acridine)
3. Six-membered heterocycles with one heteroatom (quinoline, isoquinoline)
4. Five-membered heterocycles with one heteroatom (pyrrole, furan)
5. Five-membered heterocycles with one heteroatom (thiophene, indole)
6. Six-membered heterocycles with two heteroatoms (pyrimidine, pyridazine, pyrazine)
7. Six-membered heterocycles with two heteroatoms (purine, pteridine)
8. Five-membered heterocycles with two heteroatoms (oxazole, isoxazole)
9. Five-membered heterocycles with two heteroatoms (thiazole, isothiazole)
10. Five-membered heterocycles with two heteroatoms (imidazole, pyrazole)
11. Non-aromatic heterocycles (tetrahydrofuran, 1,4-dioxane)
12. Non-aromatic heterocycles (morpholine, piperidine, piperazine)

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

Course language:
Slovak

Notes:
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: 155

A	B	C	D	E	FX
58.71	27.1	9.68	3.23	1.29	0.0

Provides: RNDr. Mariana Budovská, PhD., univerzitná docentka

Date of last modification: 21.12.2021

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ FMCH/18	**Course name:** Medicinal Chemistry

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

Number of ECTS credits: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
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.

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

Brief outline of the course:
1. Introduction, classification of drugs
2. Factors influencing design and activity of drugs of the third generation
3. Drug chirality
4. Search for new drugs, structure-activity relationships
5., 6. Chemotherapeutics of central, peripheral and vegetative nervous system
7. Antibacterial compounds
8. Antitumor compounds
9. Antiviral compounds
10. Antitussives and expectorants
11. Disinfectants
12. Excretory and digestive system drugs

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

Course language:
Slovak

Notes:
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: 33

A	B	C	D	E	FX
48.48	33.33	9.09	6.06	3.03	0.0

Provides: RNDr. Mariana Budovská, PhD., univerzitná docentka

Date of last modification: 21.12.2021

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KF/FMPV/22	**Course name:** Methodology of Science 1

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Attendance: A student may have one unexcused absence in seminar at the most. Absence in more than one seminar must be reasoned and substituted by consultations. Conditions of continuous and final control: during the semester a student is continuously checked and assessed according to his/her activity. To be awarded the credits, a student must pass a test from knowledge obtained in the lectures and seminars. Results of the test will make up the final grade.

Learning outcomes:
The course is aimed at getting familiar with the basic issues of methodology and philosophy of science. Significant part will be devoted to presenting the main concepts of the philosophy of science in the 20th century and this aim will be achieved by reading the source and interpretive texts.

Brief outline of the course:
• Falsificationism and critical realism by K. R. Popper.
• Development and critique of the Popper's concept.
• Understanding the science development in the work by T. S. Kuhn.
• Methodology of scientific research programmes of I. Lakatos.
• Methodological anarchism of P. Feyerabend.
• W.V.O. Quine – the issue of relation between theory and empiricism.

Recommended literature:
BILASOVÁ, V. – ANDREANSKÝ, E.: Epistemológia a metodológia vedy. Prešov: FF PU 2007.
FAJKUS, B.: Filosofie a metodologie vědy. Praha: Academia 2005.
BEDNÁRIKOVÁ, M. Úvod do metodológie vied. Trnavská univerzita: Trnava 2013.
DÉMUTH, A. Filozofické aspekty dejín vedy. Trnavská univerzita: Trnava 2013.
FEYERABEND, P.: Proti metodě. Prel. J. Fiala. Praha: Aurora 2001.
KUHN, T. S.: Štruktúra vedeckých revolúcií. Prel. Ľ. Valentová. Bratislava 1982.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 6

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

Provides: prof. PhDr. Eugen Andreanský, PhD.

Date of last modification: 01.02.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
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.

Learning outcomes:
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.

Brief outline of the course:
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.

Recommended literature:
1. T. W. Green, P. G. M. Wuts: Protective groups in organic synheis, third edition, John Wiley and Sons, Inc. 1999, ISBN: 0-471-22057-4.
2. B. M. Trost, I. Fleming I.: Comprehensive organic synthesis, Eds. Vol. 1-9. Pergamon Press, Oxford 1991.
3. B. Carruthers, I. Coldham: Modern methods of organic synthesism 4th edition, Cambridge University Press 2004, UK, ISBN: 0-521-77097-1.

4. G. S. Zweifel, M. H. Nantz: Modern Organic Synthesis, W. H. Freeman and Company 2007, NY, ISBN: 0-7167-7266-3.
5. J. Fuhrhop, G. Penzlin: Organic synthesis, VCH Weinheim, 1994.

Course language:
slovak, 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: 143

A	B	C	D	E	FX
60.14	19.58	11.89	6.99	1.4	0.0

Provides: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, doc. RNDr. Ladislav Janovec, PhD.

Date of last modification: 31.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ MM1/00	**Course name:** Molecular modeling

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

Number of ECTS credits: 4

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

Course level: II.

Prerequisities:

Conditions for course completion:
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.

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

Brief outline of the course:
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.

Recommended literature:

1. LEACH, Andrew R.: Molecular Modelling: Principles and Applications.
2. JENSEN, Frank: An Introduction to Computational Chemistry.
3. Manuals for MOPAC, HYPERCHEM, GAMESS, GAUSSIAN.
4. Praktikum z molekulového modelingu / Ladislav Janovec

Course language:
slovak language and english language

Notes:
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

Course assessment
Total number of assessed students: 82

A	B	C	D	E	FX
82.93	17.07	0.0	0.0	0.0	0.0

Provides: doc. RNDr. Ladislav Janovec, PhD.

Date of last modification: 11.08.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities:

Conditions for course completion:
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).

Learning outcomes:
To provide students with basic theoretical and practical knowledge about working on NMR spectrometers.

Brief outline of the course:
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

Recommended literature:
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: 70

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

Provides: doc. RNDr. Mária Vilková, PhD., RNDr. Zuzana Kudličková, PhD.

Date of last modification: 28.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ NCH/03	**Course name:** Neurochemistry

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

Number of ECTS credits: 5

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
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.

Learning outcomes:
Explanation of the fundamental principles of the chemical transmission between nerve cells.

Brief outline of the course:
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, Ca2+). Metabotropic and ionotropic receprors, their structure.

Recommended literature:
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

Course language:
english

Notes:
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: 139

A	B	C	D	E	FX
59.71	18.71	13.67	6.47	1.44	0.0

Provides: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

Date of last modification: 20.12.2021

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ OCHST/15	**Course name:** Organic chemistry
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course:	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course: RMechanisms 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, nuclephilic susbtitution, 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 momosaccharides, 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.

Recommended literature:

1. J. Clayden, N. Greeves, S. Warren, P. Wothers: Organic Chemistry, Oxford University Press, 2012.
2. Solomons T.W. Graham: Solomon's Organic Chemistry, Willey&Sons Inc., 2017.
3. J. E. McMurry: Organic Chemistry, Cengage, 2015.

Course language:
english

Notes:

Course assessment
Total number of assessed students: 58

A	B	C	D	E	FX
67.24	25.86	5.17	0.0	1.72	0.0

Provides:

Date of last modification: 12.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ KOR1/00	**Course name:** Organic reaction kinetics

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

Number of ECTS credits: 4

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

Course level: II.

Prerequisities:

Conditions for course completion:
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%).

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

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

Recommended literature:

Course language:
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: RNDr. Zuzana Kudličková, PhD., doc. RNDr. Mária Vilková, PhD.

Date of last modification: 28.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
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.

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

Brief outline of the course:
Retrosynthetic analysis of organic compounds and synthesis planning. Building of a carbon backbone using organometallic compounds and enolates. Reactions resulting in creation of multiple bonds. Synthesis of cyclic molecules. Synthesis of halogenderivatives, oxygen containing organic molecules, nitrogen derivatives. Protecting groups and special synthetic techniques. Synthesis of complex molecules and natural products.

Recommended literature:
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.

Course language:
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: 184

A	B	C	D	E	FX
56.52	28.26	10.33	2.72	2.17	0.0

Provides: RNDr. Ján Elečko, PhD.

Date of last modification: 28.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ CHOZ/18	**Course name:** Organometallic Compounds

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

Number of ECTS credits: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
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 synhetic 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.

Learning outcomes:
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.

Brief outline of the course:
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.

Recommended literature:
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

Course language:
Slovak language and English language

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: 44

A	B	C	D	E	FX
61.36	20.45	11.36	4.55	2.27	0.0

Provides: RNDr. Jana Špaková Raschmanová, PhD.

Date of last modification: 21.12.2021

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/FAK1a/07	**Course name:** Pharmacology I

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

Number of ECTS credits: 4

Recommended semester/trimester of the course: 1.

Course level: II.

Prerequisities: ÚCHV/FMCH/04

Conditions for course completion:
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.

Learning outcomes:
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.

Brief outline of the course:
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.

Recommended literature:
1. Whalen, K. et al.: Lippincott Illustrated Reviews: Pharmacology 7th edition, 2019.
2. Ritter, J. M. et al.: Rang & Dale's Pharmacology, 2019.

Course language:
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: 12

abs	n
100.0	0.0

Provides: prof. MVDr. Ján Mojžiš, DrSc., prof. MUDr. Ladislav Mirossay, DrSc., doc. MVDr. Martina Bago Pilátová, PhD.
Date of last modification: 11.01.2022
Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities: ÚCHV/FAK1a/07

Conditions for course completion:
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.

Learning outcomes:
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.

Brief outline of the course:
Basic knowledge about the major classes of drugs currently used in medical practice.
Detailed knowledge about drugs used to treat cancer diseases

Recommended literature:
1. Whalen, K. et al.: Lippincott Illustrated Reviews: Pharmacology 7th edition, 2019.
2. Ritter, J. M . et al.: Rang & Dale's Pharmacology, 2019.

Course language:
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: 9

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

Provides: prof. MVDr. Ján Mojžiš, DrSc., prof. MUDr. Ladislav Mirossay, DrSc., doc. MVDr. Martina Bago Pilátová, PhD.
Date of last modification: 11.01.2022
Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KF/ FILA/22	**Course name:** Philosophical Antropology
Course type, scope and the method: **Course type:** Practice **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** present	
Number of ECTS credits: 2	
Recommended semester/trimester of the course:	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 0

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

Provides: doc. PhDr. Kristína Bosáková, PhD.
Date of last modification: 01.02.2022
Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
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.

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

Brief outline of the course:
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 Schodinger 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.

Recommended literature:
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 Slavíček, Eva Muchová, Daniel Hollas, Vít Svoboda, Ondřej Svoboda. VSCHT Praha 2014 - 2019.

Course language:
slovak language and english language

Notes:
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.

Course assessment
Total number of assessed students: 32

A	B	C	D	E	FX
81.25	15.63	3.13	0.0	0.0	0.0

Provides: doc. RNDr. Ladislav Janovec, PhD.

Date of last modification: 11.08.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ ÚTVŠ/CM/13	**Course name:** Seaside Aerobic Exercise

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:
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

Learning outcomes:
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

Brief outline of the course:
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.

Recommended literature:
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. Posilováni s vlastním tělem 417 krát jinak. Praha: Grada. 209 s.
5. KOVAŘÍKOVÁ, K. 2017. Aerobik a fitness. Karolium, 130 s.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 54

abs	n
11.11	88.89

Provides: Mgr. Agata Dorota Horbacz, PhD.

Date of last modification: 29.03.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KF/ FIVYC/22	**Course name:** Selected Topics in Philosophy of Education (General Introduction)

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 2

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

Provides: PhDr. Dušan Hruška, PhD.

Date of last modification: 27.04.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/SEP1/15	**Course name:** Semestral Project 1

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

Number of ECTS credits: 4

Recommended semester/trimester of the course: 1.

Course level: II.

Prerequisities:

Conditions for course completion:
Notification any thesis adversed by choosen department. Semester experimental work with master degree thesis.

Learning outcomes:
Semester scientific thesis.

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

Recommended literature:
Recent journal references.

Course language:
english

Notes:
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.

Course assessment
Total number of assessed students: 72

abs	n
98.61	1.39

Provides: prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Andrea Morovská Turoňová, PhD., doc. RNDr. Andrea Straková Fedorková, PhD., doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, RNDr. Ján Elečko, PhD., RNDr. Mariana Budovská, PhD., univerzitná docentka, doc. RNDr. Ladislav Janovec, PhD., RNDr. Slávka Hamuľaková, PhD., univerzitná docentka, RNDr. Monika Tvrdoňová, PhD., RNDr. Jana Špaková Raschmanová, PhD., doc. RNDr. Mária Vilková, PhD., RNDr. Zuzana Kudličková, PhD.

Date of last modification: 07.11.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/SEP2/15	**Course name:** Semestral Project 2

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities:

Conditions for course completion:
Notification any thesis adversed by choosen department. Semester experimental work with master degree thesis.

Learning outcomes:
Semester scientific thesis.

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

Recommended literature:
Recent journal references.
Chemical on-line databases.

Course language:
english

Notes:
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.

Course assessment
Total number of assessed students: 69

abs	n
100.0	0.0

Provides: doc. RNDr. Andrea Straková Fedorková, PhD., RNDr. Mariana Budovská, PhD., univerzitná docentka, RNDr. Ján Elečko, PhD., RNDr. Slávka Hamuľaková, PhD., univerzitná docentka, doc. RNDr. Ladislav Janovec, PhD., RNDr. Zuzana Kudličková, PhD., doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, RNDr. Andrea Morovská Turoňová, PhD., prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., RNDr. Monika Tvrdoňová, PhD., doc. RNDr. Mária Vilková, PhD., RNDr. Jana Špaková Raschmanová, PhD.

Date of last modification: 07.11.2022
Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Min. 80% of active participation in classes.

Learning outcomes:
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.

Brief outline of the course:
Brief outline of the course:
The Institute of physical education and sport at the Pavol Jozef Šafárik University offers 20 sports activities aerobics; aikido, basketball, badminton, body-balance, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, fitness, indoor football, SM system, step aerobics, table tennis, chess, volleyball, tabata, cycling.
Additionally, the Institute of physical education and sport at the Pavol Jozef Šafárik University offers winter courses (ski course, survival) and summer courses (aerobics by the sea, rafting on the Tisza River) with an attractive programme, sports competitions with national and international participation.

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
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: 15193

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
86.05	0.07	0.0	0.0	0.0	0.05	8.69	5.15

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

Date of last modification: 07.02.2024

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: I., II.

Prerequisities:

Conditions for course completion:
active participation in classes - min. 80%.

Learning outcomes:
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.

Brief outline of the course:
Brief outline of the course:
The Institute of physical education and sport at the Pavol Jozef Šafárik University offers 20 sports activities aerobics; aikido, basketball, badminton, body-balance, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, fitness, indoor football, SM system, step aerobics, table tennis, chess, volleyball, tabata, cycling.
Additionally, the Institute of physical education and sport at the Pavol Jozef Šafárik University offers winter courses (ski course, survival) and summer courses (aerobics by the sea, rafting on the Tisza River) with an attractive programme, sports competitions with national and international participation.

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
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: 13318

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
84.37	0.51	0.02	0.0	0.0	0.05	10.78	4.28

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

Date of last modification: 07.02.2024

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I., II.

Prerequisities:

Conditions for course completion:
min. 80% of active participation in classes

Learning outcomes:
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.

Brief outline of the course:
Brief outline of the course:
The Institute of physical education and sport at the Pavol Jozef Šafárik University offers 20 sports activities aerobics; aikido, basketball, badminton, body-balance, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, fitness, indoor football, SM system, step aerobics, table tennis, chess, volleyball, tabata, cycling.
Additionally, the Institute of physical education and sport at the Pavol Jozef Šafárik University offers winter courses (ski course, survival) and summer courses (aerobics by the sea, rafting on the Tisza River) with an attractive programme, sports competitions with national and international participation.

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
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: 9100

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
88.37	0.07	0.01	0.0	0.0	0.02	4.46	7.07

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

Date of last modification: 07.02.2024

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I., II.

Prerequisities:

Conditions for course completion:
min. 80% of active participation in classes

Learning outcomes:
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.

Brief outline of the course:
Brief outline of the course:
The Institute of physical education and sport at the Pavol Jozef Šafárik University offers 20 sports activities aerobics; aikido, basketball, badminton, body-balance, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, fitness, indoor football, SM system, step aerobics, table tennis, chess, volleyball, tabata, cycling.
Additionally, the Institute of physical education and sport at the Pavol Jozef Šafárik University offers winter courses (ski course, survival) and summer courses (aerobics by the sea, rafting on the Tisza River) with an attractive programme, sports competitions with national and international participation.

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
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: 5671

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
82.81	0.28	0.04	0.0	0.0	0.0	7.97	8.9

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

Date of last modification: 07.02.2024

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ STRE/09	**Course name:** Structure and Reactivity in Organic Chemistry

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

Number of ECTS credits: 4

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

Course level: II.

Prerequisities:

Conditions for course completion:
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.

Learning outcomes:
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.

Brief outline of the course:
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

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

Course language:
Slovak language and english language.

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: 84

A	B	C	D	E	FX
44.05	32.14	16.67	4.76	2.38	0.0

Provides: RNDr. Slávka Hamuľaková, PhD., univerzitná docentka, doc. RNDr. Mária Vilková, PhD.

Date of last modification: 15.08.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ SVK1/00	**Course name:** Students Scientific Conference (Presentation)
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 2., 4.	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 33

abs	n
100.0	0.0

Provides: prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Renáta Oriňaková, DrSc., prof. Dr. Yaroslav Bazeľ, DrSc., doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, doc. RNDr. Ladislav Janovec, PhD., RNDr. Slávka Hamuľaková, PhD., univerzitná docentka, RNDr. Mariana Budovská, PhD., univerzitná docentka, RNDr. Ján Elečko, PhD., RNDr. Jana Špaková Raschmanová, PhD., RNDr. Monika Tvrdoňová, PhD., doc. RNDr. Mária Vilková, PhD., RNDr. Zuzana Kudličková, PhD.

Date of last modification: 01.12.2021

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ LKSp/13	**Course name:** Summer Course-Rafting of TISA River

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:
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

Learning outcomes:
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.

Brief outline of the course:
Brief outline of the course:
1. Assessment of difficulty of waterways
2. Safety rules for rafting
3. Setting up a crew
4. Practical skills training using an empty canoe
5. Canoe lifting and carrying
6. Putting the canoe in the water without a shore contact
7. Getting in the canoe
8. Exiting the canoe
9. Taking the canoe out of the water
10. Steering
a) The pry stroke (on fast waterways)
b) The draw stroke

11. Capsizing
12. Commands

Recommended literature:
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: https://ulozto.sk/tamhle/UkyxQ2lYF8qh/name/Nahrane-7-5-2021-v-14-46-39#!ZGDjBGR2AQtkAzVkAzLkLJWuLwWxZ2ukBRLjnGqSomICMmOyZN==

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 209

abs	n
37.32	62.68

Provides: Mgr. Dávid Kaško, PhD.

Date of last modification: 29.03.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 4

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

Course level: II.

Prerequisities:

Conditions for course completion:
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%

Learning outcomes:
Study of interactions between molecules and their arrangement into komplexes which are the basic of most of biochemic systems and modern materials.

Brief outline of the course:
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. Porfyrins, 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. Cavites 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 chanels. Self-organization. Formation of discrete geometric structures and capsules as result of multiple components interactions. Template synthesis. Catenanes, rotaxanes and helicates. Programable supramolecular systems. Miceles and double-layers. Dendrimers. Crystal enginering. Synthesis of crystals and co-crystals on basis of non-covalent interactions of certain molecules and prediction of their structure. Effect of aditives on growing and structure of crystals. Enantiospecific synthesis in crystals. Liquid crystals.

Recommended literature:

1. Lecture handouts can be found at http://lms.upjs.sk/course/view.php?id=385
2. J.W.Steed and J.L.Atwood, Supramolecular chemistry, Wiley : Chichester, 2000.
3. F.Vogtle, Supramolecular chemistry: an introduction, Wiley : Chichester, 1991.
4. J. W. Steed: Supramolecular chemistry, John Wiley and Sons. Ltd. 2009.

Course language:
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: 75

A	B	C	D	E	FX
66.67	20.0	10.67	1.33	1.33	0.0

Provides: RNDr. Ján Elečko, PhD.

Date of last modification: 28.01.2022

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ TOXOL/18	**Course name:** Toxicology of Organic Compounds

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

Number of ECTS credits: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
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.

Learning outcomes:
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.

Brief outline of the course:
General principles of toxicology, definition of xenobiotics, toxic effects, local and systemic toxicity. Toxicikinetic, 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.

Recommended literature:
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.

Course language:
english

Notes:

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: 28

A	B	C	D	E	FX
64.29	21.43	7.14	3.57	3.57	0.0

Provides: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

Date of last modification: 20.12.2021

Approved: doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 3

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
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).

Learning outcomes:
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.

Brief outline of the course:
1. Introduction to NMR
2. Assignment of 1H and 13C 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 F NMR
12. 15N NMR
13. 31 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: 104

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., univerzitná profesorka