CONTENT

1. Biochemical Analytical Methods.... 2
2. Biochemistry and Clinical Biochemistry....4
3. Biochemistry of Microorganisms.... 5
4. Biochemistry of Physiological Processes....6
5. Bioorganic chemistry....7
6. Biophysical Chemistry I....9
7. Biophysical Chemistry II....11
8. Biotechnology Practical....13
9. Class Project.... 14
10. Clinical Biochemistry.... 16
11. Communication and Cooperation.... 17
12. Diploma Thesis and its Defence.... 19
13. Enzymology.... 20
14. Experimental Methods to Master´s Thesis....22
15. Laboratory Practice to Diploma Thesis....24
16. Methodology of Science 1....25
17. Modern Trends in Biochemistry and Molecular Biology....27
18. Molecular modeling....29
19. Nucleic Acids - Structure and Function....31
20. Patobiochemistry....33
21. Philosophical Antropology.... 34
22. Proteins, Structure and Function.... 35
23. Seaside Aerobic Exercise.... 37
24. Selected Topics in Philosophy of Education (General Introduction).... 39
25. Semestral Project I....40
26. Semestral Project II.... 42
27. Seminar to Diploma Thesis....44
28. Sports Activities I....46
29. Sports Activities II....48
30. Sports Activities III.... 50
31. Sports Activities IV....52
32. Students Scientific Conference - Seminar and Presentation.... 54
33. Summer Course-Rafting of TISA River....55
34. Xenobiochemistry.... 57

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ BAM1/00	**Course name:** Biochemical Analytical Methods

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

Number of ECTS credits: 4

Recommended semester/trimester of the course: 1.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Absence of a maximum of three exercises.
Exam carried out in writing with at least 51% score.

Learning outcomes:
The student will gain comprehensive information about the methods and approaches that are used in analyzes in the biochemical laboratory.

Brief outline of the course:
1. Introduction to analytical methods in biochemistry
2. Processing and interpretation of results
3. The effectiveness of the chosen system of methods to ensure the required level of analytical reliability
4. Spectral methods for determination of biomacromolecules
5. Spectroscopy
6. Biosensors
7. Enzymes in bioanalytical chemistry
8. Separation methods
9. Electroanalytical methods
10. Immunochemical methods

Recommended literature:
D. J. Holme, H. Peck: Analytical Biochemistry, 1998
S. R. Mikkelsen, E. Cortón: Bioanalytical Chemistry, 2004
V. A. Gault, N. H. McClenaghan: Understanding Bioanalytical Chemistry: Principles and applications, 2009

Course language:
Slovak, English

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

Course assessment
Total number of assessed students: 91

A	B	C	D	E	FX
31.87	20.88	19.78	20.88	6.59	0.0

Provides: doc. RNDr. Rastislav Varhač, PhD.

Date of last modification: 16.11.2021

Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ BCHKBCH/14	**Course name:** Biochemistry and Clinical Biochemistry
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: ÚCHV/BFC1a/01 and ÚCHV/KLB1/03 and ÚCHV/BFC1b/03	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment

Total number of assessed students: 72

A	B	C	D	E	FX
44.44	27.78	18.06	4.17	5.56	0.0

Provides:
Date of last modification: 07.02.2023
Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BCM/04	**Course name:** Biochemistry of Microorganisms

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: 1., 3.

Course level: II.

Prerequisities:

Conditions for course completion:
2 tests
test

Learning outcomes:
The aim of biochemistry of microorgamism teaching is to acquire knowledge in the field of microorganisms.

Brief outline of the course:
Structure and physiology of microorganisms; microbial nutrition, growth and control; microbial molecular biology and genetics; medical microbiology; immunology and applied microbiology; microbial diseases and their control.

Recommended literature:
McCall D., Stock D., Achrey P., Introduction to Microbiology, Blackwell Science, USA, 2001
Willey, J.M., Sherwood L.M., Woolverton C.J., Prescott, Harley, and Klein´s Microbiology, McGraw-Hill Int. Ed., USA, 2008
Black J.G., Microbiology, John Wiley and Sons, USA, 2008

Course language:

Notes:

Course assessment
Total number of assessed students: 183

A	B	C	D	E	FX
49.18	25.68	17.49	7.1	0.55	0.0

Provides: prof. RNDr. Mária Kožurková, CSc.

Date of last modification: 11.11.2021

Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BFP/04/08	**Course name:** Biochemistry of Physiological Processes

Course type, scope and the method:
Course type: Lecture
Recommended course-load (hours):
Per week: 2 **Per study period:** 28
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:
Cellular physiology. Biochemical specialization of intracellular organelles.
Biological membranes, ion channels, membrane pumps.
Cell cycle, cell cycle regulation.
Apoptosis and regulatory mechanisms of apoptosis.
Physiology of specific organs in terms of metabolism. Muscle physiology and muscle contraction.
Liver and gallbladder physiology. Kidney physiology.
Endocrine system, importance of internal secretion, mechanism of action of hormones. The second messengers and signal-transduction pathways.

Recommended literature:
L.S.Costanzo, Physiology, fourth edition, 2010 Saunders, Inc, Elsevier.
S. Reed, Essential Physiological Biochemistry, 2009 John Wiley & Sons, Ltd.
B. Alberts, Molecular Biology of the Cell, sixth edition, 2002 Garland Science, Taylor & Francis Group. LLC.
Články v časopisoch.

Course language:

Notes:

Course assessment
Total number of assessed students: 132

A	B	C	D	E	FX
41.67	25.76	15.15	9.85	7.58	0.0

Provides: RNDr. Nataša Tomášková, PhD., prof. RNDr. Erik Sedlák, DrSc.

Date of last modification: 11.11.2021

Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BOC/03	**Course name:** Bioorganic chemistry

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

Number of ECTS credits: 5

Recommended semester/trimester of the course:

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:
1. Proximity effect in organic chemistry. Molecular adaptation ond recognition on supramolecular level.
2. Bioorganic chemistry of aminoacids and polypeptides. Analogy between organic reactions and biochemical transformations.
3. Chemistry of peptide bond. Nonribosomal synthesis of peptides.
4. Asymmetric synthesis of aminoacids, chiral organometal catalyzators.
5. Transition state analogues, antibodies as enzymes, chemical mutations, molecular recognition and synthesis of biologicaly active compounds.
6. Bioorganic synthesis of polynucleotides. Energy storage, DNA intercalates, chemical evolutions of biopolymers.
7. Enzymatic chemistry, introduction to catalysis and enzymes, multifunctional catalysis, chymotrypsin, stereocontrolled hydrolysis, immobilized enzymes in organic synthesis.
8. Enzymatic models. Host-guest complexation chemistry, crown ethers, chemistry of membranes, cyclodextrines, steroid templates. Biomimetic polyene cyclization.
9. Metal ions in proteins and biomolecules, carboxypeptidase, hydrolysis of aminoacid esters, amides, peptides.
10. Biomodel of photosynthesis and energy transfer, cobalt, vitamine B12. Chemistry of coenzymes, pyridoxalphosphate, suicide enzyme inactivators and affinity labels, tiamine pyrophosphate, biotin.

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

Course language:

Notes:

Course assessment
Total number of assessed students: 157

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

Provides: RNDr. Ján Elečko, PhD., RNDr. Jana Špaková Raschmanová, PhD.

Date of last modification: 30.09.2021

Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BFC1a/01	**Course name:** Biophysical Chemistry 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: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
Test and oral examination.

Learning outcomes:

Brief outline of the course:
Matter and its demonstration in living systems
Space and time connections in biological systems
Energy and mass connections in biological systems
Physicochemical properties of water and cell liquids
Reaction kinetics
Ligand binding
Nonequilibrium thermodynamics
Dynamics of conservative systems, chaos
Dissipative systems, attractors
Stability of biomacromolecules
Interfaces and membranes, membrane transports
Dynamics of complex biochemical process
Structuralization of biosystems induced by diffusion

Recommended literature:
Cantor,C.R.,Schimmel,P.R Biophysical Chemistry, W.H. Freeman and Co., S. Francisco,1980
P.Glansdorff, I.Prigogine, Thermodynamics theory of structure, stability and fluctuations, Willey 1971
Voet,D. Voet,J.G. Biochemistry, John Willey @Sons, 1990
Kersal E. van Holde, W. Curtis Johnson, P. Shing Ho: Principles of Physical Biochemistry, Prentise Hall, 1998
Articles from Journals
Marschall, A.G., Biophysical Chemistry, John Wiley & Sons, N.York, 1978
Hoppe, W., Lohmann, W., Markl, H., Ziegler, H., (eds.), Biophysics, Springer V., Berlin, 1983
Peitgen, H. O., Jurgens, H., Saupe, D., Fractals for the Classroom, Springer-Verlag, NY, 1992
Avnir,D (ed.)., The Fractal Approach to Heterogeneous Chemistry, John Wiley &S., NY,1989
Winfree, A. T., The Geometry of Biological Time, Springer-Verlag, NY, 1980

Harrison, L. G., Kinetic Theory of Living Pattrern, Cambridge Univ. Pres., NY, 1993

Course language:

Notes:

Course assessment
Total number of assessed students: 202

A	B	C	D	E	FX
11.88	15.84	37.62	21.78	12.87	0.0

Provides: doc. RNDr. Rastislav Varhač, PhD.

Date of last modification: 18.11.2021

Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ BFC1b/03	**Course name:** Biophysical Chemistry II
Course type, scope and the method: **Course type:** Lecture / Practice **Recommended course-load (hours):** **Per week:** 2 / 4 **Per study period:** 28 / 56 **Course method:** present	
Number of ECTS credits: 8	
Recommended semester/trimester of the course: 2., 4.	
Course level: II.	
Prerequisities: ÚCHV/BFC1a/01	
Conditions for course completion: Examination	
Learning outcomes:	
Brief outline of the course: General laboratory work problem with biological systems Properties of materials and fields Cryoscopy, pressure, density, surface tension, osmometry Callorimetry, microgravimetry Transport a hydrodynamic analysis Conductivity, ion selective and enzyme electrodes, dielectric spectroscopy Absorption spectroscopy, circular dichroism Raman and infrared spectroscopy, Spectrofluorescence, chemiluminescence, rapid kinetic techniques, Mossebauer spectroscopy NMR, EPR spectroscopy Light, x-ray scattering Atomic field force measurements, tunneling spectroscopy Microscopy (electron, light, ultrasound)	
Recommended literature: Cantor,C.R.,Schimmel,P.R Biophysical Chemistry, W.H. Freeman and Co., S. Francisco,1980 Kersal E. van Holde, W. Curtis Johnson, P. Shing Ho: Principles of Physical Biochemistry, Prentise Hall, 1998 Atkins PW. Physical Chemistry, Oxford Univ. Press, Oxford, 1998 Hoppe W, Lohmann W, Markl H, Ziegler H (ed.) Biophysics, Springer- Verlag, Berlin, 1983 Articles from Journals	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 186

A	B	C	D	E	FX
12.9	19.35	33.33	20.43	13.44	0.54

Provides: doc. RNDr. Rastislav Varhač, PhD., doc. RNDr. Gabriel Žoldák, DrSc.

Date of last modification: 18.11.2021

Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ PBT1/03	**Course name:** Biotechnology Practical

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 5 **Per study period:** 70
Course method: present

Number of ECTS credits: 6

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

Course level: II.

Prerequisities:

Conditions for course completion:
Výučba sa realizuje prezenčne alebo dištančne s využitím nástroja MS Teams. Formu výučby upresní vyučujúci na začiatku semestra a priebežne aktualizuje.

Learning outcomes:
Students will have knowlwdge of a variety of spectral and molecular-biology techniques, and obtain practical biotechniological skills from food and beverage production.

Brief outline of the course:
Characterization and practical application of lactic and alcohol fermentation, spectral methods. Food preservatives and their qualitative and quantitative evidence. Antibiotics - bacteriocins. Vitamins - antioxidant action of vitamin C. Production of cosmetics.

Recommended literature:
M.Ferenčík, B. Škárka, Biochemical laboratory methods, ALFA 1981.
C.Fini, A.Floridi, V.N. Finelli, B.Wittman-Liebold, Laboratory Methodology in Biochemistry, CRC Press, Florida, 1990.
D. Sabolová, Návody na praktické cvičenia z biotechnológie, Košice, 2014, http://www.upjs.sk/pracoviska/univerzitna-kniznica/e-publikacia/#pf .

Course language:

Notes:

Course assessment
Total number of assessed students: 148

A	B	C	D	E	FX
66.22	26.35	6.08	0.68	0.68	0.0

Provides: RNDr. Danica Sabolová, PhD., univerzitná docentka

Date of last modification: 17.08.2022

Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/RP/14	**Course name:** Class Project

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
Submission of a year project based on the assignment of the teacher.
Its content is experimental laboratory work on a topic assigned by the teacher and evaluation of the obtained experimental results. The condition for successful completion is realization of the assigned experiments and their evaluation in the form of presentation. After the implementation of experiments, successful presentation of results and answering any comments, the teacher will give the evaluation "completed".

Learning outcomes:
Mastering of individual work in the laboratory and creative processing of the assigned topic, according to available literature.

Brief outline of the course:

Recommended literature:
According to the recommendations of project supervisors.
Current journal literature.

Course language:
Slovak, english.

Notes:

Course assessment
Total number of assessed students: 223

abs	n
99.1	0.9

Provides: doc. RNDr. Miroslav Almáši, PhD., RNDr. Miroslava Matiková Maľarová, PhD., prof. RNDr. Zuzana Vargová, Ph.D., RNDr. Martin Vavra, PhD., prof. RNDr. Juraj Černák, DrSc., doc. RNDr. Juraj Kuchár, PhD., prof. RNDr. Vladimír Zeleňák, DrSc., doc. RNDr. Ivan Potočňák, PhD., prof. Dr. Yaroslav Bazeľ, DrSc., prof. Mgr. Vasiľ Andruch, DSc., doc. RNDr. Katarína Reiffová, PhD., doc. RNDr. Taťána Gondová, CSc., doc. Ing. Viera Vojteková, PhD., RNDr. Rastislav Serbin, PhD., RNDr. Jana Šandrejová, PhD., univerzitná docentka, doc. RNDr. Rastislav Varhač,

PhD., prof. RNDr. Mária Kožurková, CSc., doc. RNDr. Viktor Víglaský, PhD., RNDr. Nataša Tomášková, PhD., RNDr. Danica Sabolová, PhD., univerzitná docentka, prof. RNDr. Erik Sedlák, DrSc.
Date of last modification: 25.01.2022
Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ KLB1/03	**Course name:** Clinical Biochemistry

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.

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: 199

A	B	C	D	E	FX
62.31	23.12	10.55	2.01	2.01	0.0

Provides: MUDr. Angela Molčányiová, PhD., prof. RNDr. Mária Kožurková, CSc.

Date of last modification: 07.03.2023

Approved: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ DPO/22	**Course name:** Diploma Thesis and its Defence

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

Number of 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: 24

A	B	C	D	E	FX
70.83	25.0	4.17	0.0	0.0	0.0

Provides:

Date of last modification: 14.01.2022

Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ ENZ/04	**Course name:** Enzymology

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

Number of ECTS credits: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
Successful completion of the exam, which consists of two parts: (i) written and (ii) oral part. The student passes the exam if s/he obtains at least 60% of the points in the written part and at the same time adequately answers the asked questions in the oral part.

Learning outcomes:
Understand the principle of enzyme catalysis. Learn to use the basic equations of enzyme kinetics. Ability to determine the basic kinetic and thermodynamic parameters of the enzyme-catalyzed reaction from experimental measurements.

Brief outline of the course:
1. Introduction. Chemical catalysis – theory of transition state.
2. Enzyme catalysis - types and examples.
3. Cofactors. Active site - lock and key, induced fit. Enzymes - classification.
4. 3D structure of proteins. Noncovalent interactions. Secondary, tertiary and quaternary structures. Convergent and divergent evolution. Multienzyme complexes. Dyanmics of proteins.
5. Ligand binding. Thermodynamics and konetics. Techniques.
6. Chemical kinetics. Basic equations of enzyme kinetics.
7. Regulations of enzyme activity - examples.
8. Conformational change, allosteric regulation. Regulation of metabolic pathways.
9. Experimental determination of enzyme activity. pH and temperature dependence of enzyme catalysis.
10. Determination of individual rate constants. Stop flow. Enzyme-substrate complementarities and the use of binding energy in enzyme catalysis.
11. Reversible inhibition.
12. Irreversible inhibition.
13. Specificity and control mechanisms. „Moonlighting“ enzymes. Applications of enzymes (organic solvents). Catalytic antibodies. Extremophiles. Directed selection of enzymes. Enzymatic reactions with multiple substrates.

Recommended literature:
T.E. Creighton: Proteins - structures and molecular properties, 1993, W.H. Freeman and Company - New York.

Alan Fersht “Structure and Mechanism in Protein Science: A Guide to Enzyme Catalysis and Protein Folding. “ (3rd Ed. W. H. Freeman and Company, 1999)
Robert A. Copeland: Enzymes (2nd edition), Wiley-VCH, 2000.

Course language:

Notes:

Course assessment
Total number of assessed students: 168

A	B	C	D	E	FX
37.5	22.62	16.67	14.29	8.33	0.6

Provides: prof. RNDr. Erik Sedlák, DrSc.

Date of last modification: 14.11.2021

Approved: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ LCDP/15	**Course name:** Laboratory Practice to 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: 6	
Recommended semester/trimester of the course: 3.	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	
Course assessment Total number of assessed students: 73	

abs	n
98.63	1.37

Provides: prof. RNDr. Mária Kožurková, CSc., doc. RNDr. Viktor Víglaský, PhD., prof. RNDr. Erik Sedlák, DrSc., RNDr. Nataša Tomášková, PhD., doc. RNDr. Rastislav Varhač, PhD., RNDr. Danica Sabolová, PhD., univerzitná docentka
Date of last modification: 25.01.2022
Approved: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BMB1/03	**Course name:** Modern Trends in Biochemistry and Molecular Biology

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: 1.

Course level: II.

Prerequisities:

Conditions for course completion:
Participation in lectures (also by distance learning).
The lecturer conducting the lecture and related seminar will excuse the justified absence of the student (sickness, family reasons, etc.) at a maximum of two lectures/seminars during the semester. In the event of longer-term justified absence (e.g. due to sickness), the student must provide evidence of mastery of the missed course content by means of an agreed substitute; oral examination

Learning outcomes:
To give an overview on modern biochemistry and molecular biology methods and its application in practice.

Brief outline of the course:
Cell signaling system. Molecular basis of neoplastic cell transformation leading to development of cancer - oncogenes, tumor suppressing genes, regulatory regions of DNA. Gene mutations and DNA repair mechanisms. Induced pluripotent stem cells.
Current trends and advances in the study of nucleic acids, their biological significance in cell metabolism. Gene therapy. Gene editing. Gene silencing.
The classification of viruses based on genetic material, the effect of physical and chemical factors on viruses. Biochemistry of viruses. Virus replication. Viral oncogenicity. Retroviruses and HIV. Pandemic viruses - Covid, SARS, MERS, Ebola, influenza papillomaviruses.
Prions. Aptamers and nanobioconjugates.
Molecular basis of the manifestation of genetically determined diseases and their detection and diagnostic.

Recommended literature:
Alberts et al: Molecular Biology of the Cell, Garland Publishing, 1994
Watson et al., Recombinant DNA, New York, 1992
Bloomfield et al., Nucleic acids - structures, properties and function, Canada, 1999
Scientific reports

Course language:

Notes:

Course assessment Total number of assessed students: 218					
A	B	C	D	E	FX
28.9	24.31	27.52	14.68	4.13	0.46
Provides: doc. RNDr. Viktor Víglaský, PhD.					
Date of last modification: 12.11.2021					
Approved: prof. RNDr. Mária Kožurková, CSc.					

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:

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: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ NKF/22	**Course name:** Nucleic Acids - Structure and Function

Course type, scope and the method:
Course type: Lecture / Practice
Recommended course-load (hours):
Per week: 3 / 0 **Per study period:** 42 / 0
Course method: present

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Participation in lectures (also by distance learning).
The lecturer conducting the lecture/seminar will excuse the justified absence of the student (sickness, family reasons, etc.) at a maximum of two lectures/seminars during the semester without the need for a substitute. In the event of longer-term justified absence (e.g. due to sickness), the student must provide evidence of mastery of the missed course content by means of an agreed substitute; oral examination

Learning outcomes:

Brief outline of the course:
Cell signaling system. Molecular basis of neoplastic cell transformation leading to development of cancer - oncogenes, tumor suppressing genes, regulatory regions of DNA. Gene mutations and DNA repair mechanisms. Induced pluripotent stem cells.
Current trends and advances in the study of nucleic acids, their biological significance in cell metabolism. Gene therapy. Gene editing. Gene silencing.
The classification of viruses based on genetic material, the effect of physical and chemical factors on viruses. Biochemistry of viruses. Virus replication. Viral oncogenicity. Retroviruses and HIV. Pandemic viruses - Covid, SARS, MERS, Ebola, influenza papillomaviruses.
Prions. Aptamers and nanobioconjugates.
Molecular basis of the manifestation of genetically determined diseases and their detection and diagnostic.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 4

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

Provides: doc. RNDr. Viktor Víglaský, PhD.
Date of last modification: 18.01.2022
Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/PAT1/03	**Course name:** Patobiochemistry

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: 7

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities: ÚCHV/KLB1/03

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 195

A	B	C	D	E	FX
64.62	18.97	10.26	5.13	1.03	0.0

Provides: MUDr. Angela Molčányiová, PhD., prof. RNDr. Mária Kožurková, CSc.

Date of last modification: 07.03.2023

Approved: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ PSF/03	**Course name:** Proteins, Structure and Function

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

Number of ECTS credits: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
Exam carried out in writing with at least 51% score.

Learning outcomes:
Acquisition of complex knowledge about structural specifications, functions and properties of proteins.

Brief outline of the course:
1. Amino acids and their physico-chemical properties.
2. Peptide bond and the polypeptide chain.
3. Detection of amino acids, peptides and proteins.
4. Separation methods. Determination of molecular weight of proteins.
5. Determination of protein covalent structure.
6. Peptide synthesis. Protein and peptide biosynthesis.
7. Spectroscopic methods in the study of proteins.
8. Determination of the secondary and tertiary structure of proteins.
9. Post-translational modifications – enzymatic.
10. Post-translational modifications – nonenzymatic.
11. Protein topogenesis. Chaperones and chaperonins.
12. Interactions determining properties of proteins. Conformational changes of proteins.
13. The secondary structure of proteins and polypeptides.
14. Protein folding. Protein aggregation. Prions.
15. Membrane proteins.
16. Protein degradation.

Recommended literature:
Creighton T. E.: Proteins: Structures and Molecular Properties (2. vyd.), 1992
Buxbaum E.: Fundamentals of Protein Structure and Function, 2007
Nölting B.: Protein Folding Kinetics: Biophysical Methods (2. vyd.), 2006
Nelson D. L., Cox M. M.: Lehninger Principles of Biochemistry (4. vyd.), 2004
Whitford D.: Proteins: Structure and Function, 2011
Kessel A., Ben-Tal N.: Introduction to Proteins: Structure, Function, and Motion, 2011

Course language:
Slovak, English

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

Course assessment
Total number of assessed students: 208

A	B	C	D	E	FX
30.77	19.23	23.56	15.87	9.62	0.96

Provides: prof. RNDr. Erik Sedlák, DrSc., doc. RNDr. Rastislav Varhač, PhD.

Date of last modification: 16.11.2021

Approved: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ SP1/14	**Course name:** Semestral Project I
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: 1.	
Course level: II.	
Prerequisities:	
Conditions for course completion: Elaboration and submission of a semester project based on the assignment of the teacher. Its content is an independent search of scientific information in scientometric databases, subsequent study of original papers, its processing and presentation of the results of literare search. After a successful presentation and answering any comments, the teacher will give the evaluation "completed".	
Learning outcomes: Mastering the independent and creative processing of the assigned topic using the latest scientific literature.	
Brief outline of the course: WoS and Scopus scientific databases, resp. other, by the teacher suggested, accessible databases. Ways to search these databases. Specific search accodring to the assignement of the teacher. Selection of obtained results. Finding relevant original articles. Study of selected papers. Processing of obtained information into presentation. Presentation of the results.	
Recommended literature: WoS and Scopus scientific databases, Science direct and other accessible websites of scientific literature publishers. Current scientific papers.	
Course language: Slovak, English.	
Notes:	

Course assessment
Total number of assessed students: 231

abs	n
99.57	0.43

Provides: RNDr. Rastislav Serbin, PhD., prof. RNDr. Mária Kožurková, CSc., prof. Dr. Yaroslav Bazeľ, DrSc., doc. RNDr. Ján Imrich, CSc., doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, prof. RNDr. Erik Sedlák, DrSc., RNDr. Nataša Tomášková, PhD., doc. RNDr. Viktor Víglaský, PhD., doc. RNDr. Rastislav Varhač, PhD., RNDr. Danica Sabolová, PhD., univerzitná docentka, RNDr. Jana Šandrejová, PhD., univerzitná docentka, doc. RNDr. Ivan Potočňák, PhD., RNDr. Marián Fabián, CSc., doc. RNDr. Miroslav Almáši, PhD., RNDr. Miroslava Matiková Maľarová, PhD., prof. RNDr. Zuzana Vargová, Ph.D., RNDr. Martin Vavra, PhD., prof. RNDr. Juraj Černák, DrSc., doc. RNDr. Juraj Kuchár, PhD., prof. RNDr. Vladimír Zeleňák, DrSc.

Date of last modification: 24.01.2022

Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ SP2/14	**Course name:** Semestral Project II
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of ECTS credits: 6	
Recommended semester/trimester of the course: 3.	
Course level: II.	
Prerequisities:	
Conditions for course completion: Based on the information obtained from the subject Semester Project I, theoretical preparation of experimental works in the laboratory and their realization according to the instructions of the teacher. The condition for successful completion is realization of the assigned experiments and their evaluation in the form of presentation. After the implementation of experiments, successful presentation of results and answering any comments, the teacher will give the evaluation "completed".	
Learning outcomes: Mastering independent and creative work concerning the preparation and implementation of scientific experiments in the laboratory on the basis of the assigned topic and the ability to present the results.	
Brief outline of the course: Design of experimental work based on the study of the original literature, taking into account the rules of safety at work and laboratory equipment. Design of experimental work based on the study of the original literature, taking into account the rules of safety at work and laboratory equipment. Realization of the experiment. Critical evaluation of the obtained results and their processing into the form of presentation. Presentation of results.	
Recommended literature: Literature as recommendation by the teacher. Current papers.	
Course language: Slovak, English.	
Notes:	

Course assessment
Total number of assessed students: 158

abs	n
100.0	0.0

Provides: RNDr. Rastislav Serbin, PhD., prof. RNDr. Mária Kožurková, CSc., prof. Mgr. Vasiľ Andruch, DSc., prof. Dr. Yaroslav Bazeľ, DrSc., prof. RNDr. Erik Sedlák, DrSc., doc. RNDr. Miroslava Martinková, PhD., univerzitná profesorka, doc. RNDr. Andrea Straková Fedorková, PhD., RNDr. Monika Tvrdoňová, PhD., doc. RNDr. Mária Ganajová, CSc., RNDr. Martin Vavra, PhD., prof. RNDr. Jozef Gonda, DrSc., doc. Ing. Viera Vojteková, PhD., prof. RNDr. Vladimír Zeleňák, DrSc., doc. RNDr. Ján Imrich, CSc., doc. RNDr. Ivan Potočňák, PhD., doc. RNDr. Katarína Reiffová, PhD., RNDr. Nataša Tomášková, PhD., doc. RNDr. Viktor Víglaský, PhD., RNDr. Danica Sabolová, PhD., univerzitná docentka, doc. RNDr. Rastislav Varhač, PhD., doc. RNDr. Peter Pristaš, CSc., RNDr. Jana Šandrejová, PhD., univerzitná docentka, doc. RNDr. Miroslav Almáši, PhD., RNDr. Miroslava Matiková Maľarová, PhD., prof. RNDr. Zuzana Vargová, Ph.D., prof. RNDr. Juraj Černák, DrSc., doc. RNDr. Juraj Kuchár, PhD.

Date of last modification: 25.01.2022

Approved: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ SDP/03	**Course name:** Seminar to Diploma Thesis

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: II.

Prerequisities:

Conditions for course completion:
Active participation in all seminars. In case of non-participation in a maximum of two seminars for serious reasons (e.g. illness), fulfillment of alternative criteria assigned by the teacher. After completing the course, the teacher will give an evaluation based on the activity and results of the student.

Learning outcomes:
After completing the course, the student is able to work independently in writing a thesis with an emphasis on accurate expression and adherence to ethical principles.

Brief outline of the course:
General principles of thesis writing, formal requirements of diploma thesis, plagiarism as a negative phenomenon. Processing of experimental results in the form of tables, figures and graphs. Method of citing literature, preparation for the defense of the diploma thesis.

Recommended literature:
As recommended by the teacher.

Course language:
Slovak, English

Notes:

Course assessment
Total number of assessed students: 393

A	B	C	D	E	FX
96.18	1.78	1.02	0.25	0.25	0.51

Provides: RNDr. Martin Vavra, PhD., doc. RNDr. Andrea Straková Fedorková, PhD., prof. RNDr. Mária Kožurková, CSc., prof. RNDr. Juraj Černák, DrSc., prof. Dr. Yaroslav Bazeľ, DrSc., prof. RNDr. Andrej Oriňak, PhD., prof. RNDr. Vladimír Zeleňák, DrSc., prof. RNDr. Zuzana Vargová, Ph.D., doc. RNDr. Ivan Potočňák, PhD., doc. RNDr. Taťána Gondová, CSc., doc. RNDr. Katarína Reiffová, PhD., prof. Mgr. Vasiľ Andruch, DSc., prof. RNDr. Renáta Oriňaková, DrSc., RNDr.

Miroslava Matiková Maľarová, PhD., doc. RNDr. Juraj Kuchár, PhD., RNDr. Andrea Morovská Turoňová, PhD., doc. RNDr. Miroslav Almáši, PhD., RNDr. Rastislav Serbin, PhD.
Date of last modification: 25.01.2022
Approved: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ SVKBCH/03	**Course name:** Students Scientific Conference - Seminar and Presentation
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: 4	
Recommended semester/trimester of the course:	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	
Course assessment Total number of assessed students: 10	

abs	n
100.0	0.0

Provides: prof. RNDr. Mária Kožurková, CSc.
Date of last modification: 20.09.2021
Approved: prof. RNDr. Mária Kožurková, CSc.

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: prof. RNDr. Mária Kožurková, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 5

Recommended semester/trimester of the course: 2., 4.

Course level: II.

Prerequisities:

Conditions for course completion:
Written test, from which the student must obtain at least 51 %.

Learning outcomes:
Students will have knowledge of xenobiotics metabolism in living organisms.

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

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

Course language:

Notes:

Course assessment
Total number of assessed students: 99

A	B	C	D	E	FX
56.57	20.2	13.13	6.06	4.04	0.0

Provides: RNDr. Danica Sabolová, PhD., univerzitná docentka

Date of last modification: 17.08.2022

Approved: prof. RNDr. Mária Kožurková, CSc.