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: 190

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

Provides: doc. RNDr. Ján Imrich, CSc.

Date of last modification: 28.01.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
When implementing the subject in the classical - face-to-face - form of teaching:
40% - continuous assessment of student activity at seminars, partial seminar work - assignment.
60% - final test, or seminar paper in the range of 10 A4 standard pages (with compliance with the KF citation standard for seminar and qualification papers.
In the case of a transition to distance education, students will be assigned sub-tasks for studying philosophical texts and processing the task in written form, which must be submitted by the set deadline, will be assigned points (partial assessment) and at the end will prepare a seminar paper to the same extent as in the face-to-face form teaching.

Learning outcomes:

Brief outline of the course:
Point out the roots of Western civilization that go back to the Greeks. The ancient Greeks, as one of the 3 pillars of European culture, reveal the origins of democracy and critical thinking. Emphasizing the interconnectedness of ancient philosophy and EPISTEME will enable a better understanding of the issues of thought formation, the relationship between philosophy and science, and modern society, where the emergence of mathematical natural science in the 17th century is the pillar on which Europe and European humanity stand. The student will be able to understand the questions and problems of today if he discovers the foundations and contexts leading to serious questions of today's form of society, thinking, science and culture.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 31

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

Provides: doc. PhDr. Peter Nezník, CSc.

Date of last modification: 24.08.2022
Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BCH1a/03	**Course name:** Biochemistry I

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: 3

Recommended semester/trimester of the course: 1.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Test and oral examination.

Learning outcomes:
The aim of Biochemistry I teaching is to acquire knowledge in the field of living organisms on the basis of the molecular structure and properties of biolomolecules.

Brief outline of the course:
Basic information on structure and properties of biomolecules(aminoacids, nucleotides,lipids, sugars, proteins, polynucleotides, polysaccharides, membranes, signal molecules).

Recommended literature:
Voet D., Voetová J. G., Biochemie, Victoria Publishing, Praha, 1994
Škárka B., Ferenčík M., Biochémia, Alfa, Bratislava, 2001
Musil J., Nováková O., Biochemie v obrazech a schématech, Avicenum, Praha, 1990
Berg J. M., Tymoczko J. L., Stryer L., Biochemistry, W. H. Freeman and Company, NY, 2007

Course language:

Notes:

Course assessment
Total number of assessed students: 673

A	B	C	D	E	FX
12.63	22.29	32.1	15.75	16.49	0.74

Provides: prof. Ing. Marián Antalík, DrSc., RNDr. Nataša Tomášková, PhD.

Date of last modification: 18.11.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/ BCH1b/03	**Course name:** Biochemistry II

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.

Course level: II.

Prerequisities: ÚCHV/BCH1a/03

Conditions for course completion:
Test and oral examination.

Learning outcomes:
The aim of biochemistry teaching is to acquire knowledge in the field of living organisms on the basis of their molecular structure information on cell metabolism.

Brief outline of the course:
Basic principle of metabolism, basic metabolic pathways and cycles, integration of cell metabolism.

Recommended literature:
Voet D., Voetová J. G.: Biochemie, Victoria Publishing, Praha, 1994
Škárka B., Ferenčík M.: Biochémia, Alfa, Bratislava, 2001
Berg J. M., Tymoczko J. L., Stryer L.: Biochemistry, W. H. Freeman and Company, New York, 2007
Musil J., Nováková O.: Biochemie v obrazech a schématech, Avicenum, Praha, 1990

Course language:

Notes:

Course assessment
Total number of assessed students: 312

A	B	C	D	E	FX
32.05	28.85	15.71	9.94	10.9	2.56

Provides: prof. Ing. Marián Antalík, DrSc.

Date of last modification: 18.11.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ BIOE1/14	**Course name:** Bioenergetics I

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: 3

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

Course level: II.

Prerequisities:

Conditions for course completion:
Exam
During an exam, a student should be able to demonstrate his/her knowledge from the parts of Bioenergetics which are involved in the brief outline of the course.

Learning outcomes:
To provide the introduction to the fundamental bioenergetic processes in the biological organisms. The emphasis will be on the description of the structure and function of the biomacromolecules involving in the processes of the oxidative phosphorylation. The principles of the membrane transport in the biological systems will be provide as well.

Brief outline of the course:
Week 1
Areas of interest of bioenergetics, its importance and position in science. Central concept of bioenergetics - chemiosmotic theory. The main sources of energy in living organisms. Processes in biological systems in which energy is consumed. Gibbs free energy. Structure and significance of adenosine triphosphate (ATP). Change in Gibbs energy during ATP hydrolysis. Reasons why ATP plays an important role in bioenergetics.
Week 2
Oxidation-reduction (redox) potential. Determination of redox potential. Influence of pH on redox potential. Relationship between Gibbs energy and redox potential. Ionic electrochemical gradient. The force of proton motion. Equilibrium distribution of ions on the membrane. Nernst potential. Donnan's equilibrium.
Week 3
Glycolysis. Glucose metabolism in different cell types. Glycolytic (Embden-Mayerhoff) path. Preparatory, cleavage and redox phase of glycolysis. Regulation of glycolysis. Regulatory enzymes in glycolysis. Post-glycolytic processes. Citrate (Krebs) cycle. Regulation of the Krebs cycle.
Week 4
Mitochondria - structure and basic functions. Mitochondrial genome. Origin of mitochondria. Respiratory chain in mitochondria. Respiratory chain components. Mechanism of electron transport in the respiratory chain. Proton transport across the inner mitochondrial membrane. Chemiosmotic proton circuit.

Weeks 5-6
NADH dehydrogenase (complex I) - structure and mechanism of functioning. Mechanism of proton pumping in NADH dehydrogenase. NADH dehydrogenase inhibitors. Succinate dehydrogenase (complex II) - structure and catalytic mechanism. Cytochrome c reductase (complex III) - structure. Mechanism of proton pumping in complex III - Q cycle. Cytochrome c oxidase (complex IV) - structure and basic functions. Catalytic mechanism of oxygen reduction and proton pumping in cytochrome c oxidase.
Week 7
ATP synthesis in mitochondria. ATP - synthase (F1- FO ATP-ase) - structure and basic functions. Mechanism of ATP synthesis. Control and regulation of ATP synthesis - thermodynamic and kinetic aspect. Uncoupling of electron transport from ATP formation. ATP synthase inhibitors. Proton transport in other ATP-ases.
Weeks 8-9
Photosynthesis - basic concepts and definitions. Chloroplasts - sites of photosynthesis. Photosystem I and photosystem II - structure and properties. Light phase of photosynthesis. Molecular mechanism of the light phase of photosynthesis. Dark phase of photosynthesis. Calvin cycle. CO2 fixation. Photosynthesis and ATP production. Evolutionary consequences of photosynthesis for the existence of life - the formation of molecular oxygen. Photosynthesis in bacteria.
Week 10
Alternative methods of creating a transmembrane proton gradient. Proton pumps. Bacteriorodopsin - structure and basic mechanisms of function. Primary sodium pumps. Classification of ion transport in biological membranes. ATP-controlled ion pumps.
Week 11
Mitochondrial aging theory. History of mitochondrial aging theory. Oxygen radical formation and oxidative stress in mitochondria. Testable predictions of mitochondrial aging theory. The possibility of extending the lifespan of biological organisms.
Week 12
Evolution of bioenergetics systems. The future of bioenergetics.

Recommended literature:
Literature:
1. D. Nicholls and S. Fergusson. Bioenergetics 4, Academic Press, 2013.
2. M. Wikström (Ed.). Biophysical and structural aspects of bioenergetics, The Royal Society of Chemistry, 2005.
3. D. Harris. Bioenergetics at a glance, Blackwell Science Ltd., 1995.
4. V. Saks (Ed.). Molecular system bioenergetics, Wiley-VCH, 2007.
5. I. Scheffer. Mitochondria (2nd Edition), John Wiley & Sons, Inc., 2008.
6. A.D.N.J. de Grey. The mitochondrial free radical theory of aging, R.G. Landis Company, 1999.
7. J.A.M. Smeiting, R.C.A. Sengers and J.M.F. Trijbels. Oxidative phosphorylation in health and disease, Kluwer Academic/Plenum Publisher, 2004.
8. N.W.C. Cheetham. Introducing biological energetics, Oxford University Press, 2011.
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Course language:
English language

Notes:

Course assessment
Total number of assessed students: 37

A	B	C	D	E	FX
86.49	5.41	5.41	0.0	2.7	0.0

Provides: doc. Mgr. Daniel Jancura, PhD., RNDr. Marián Fabián, CSc.

Date of last modification: 17.09.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ BSIM1/14	**Course name:** Biomolecular Simulations

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: 2., 4.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Elaboration and presentation of the project on given actual subject. Development of own computer programs on project given at the exercises. Exam. Might be substituted by written exam including Q/A part.

Learning outcomes:
Introduction to actual problematics of biomolecular simulations.

Brief outline of the course:
Structural characteristics of biological polymers. Foldamers. Central dogma of molecular biology as flow of biological information. 3D-structure and function of foldamers. Recent view on enzyme mechanisms. Experimental methods of structure determination and their limitations. Empirical force fields and methods of classical molecular dynamics. Molecular dynamics and Monte Carlo methods - algorithms and paralelization. Ab initio molecular dynamics and hybrid approaches. Computational challenges in biomolecular simulations - simulations of chemical reactions, free energy evaluation, protein folding. Computational complexity, nontraditional approaches and heuristic approaches.

Recommended literature:
Actual literature recommended by lecturer.

Course language:

Notes:

Course assessment
Total number of assessed students: 56

A	B	C	D	E	FX
76.79	7.14	12.5	1.79	1.79	0.0

Provides: doc. RNDr. Jozef Uličný, CSc.

Date of last modification: 27.03.2020

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ SBFc/03	**Course name:** Biophysical Seminary

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

Number of ECTS credits: 1

Recommended semester/trimester of the course: 1.

Course level: II.

Prerequisities:

Conditions for course completion:
The active presence on the seminars.

Learning outcomes:
To teach students of the individual scientific work in the frame of the year's and diploma thesis and lead them to the intelligible presentation of the scientific results.

Brief outline of the course:
The seminar of the biophysics department oriented to the themes of the year's and diploma works.

Recommended literature:
The literature will be recommended by supervisors of the theses.

Course language:
English language

Notes:

Course assessment
Total number of assessed students: 19

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

Provides: doc. Mgr. Daniel Jancura, PhD.

Date of last modification: 17.09.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ SBFd/03	**Course name:** Biophysical Seminary

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

Number of ECTS credits: 1

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
The active presence on the seminars.

Learning outcomes:
To teach students of the individual scientific work in the frame of the year's and diploma thesis and lead them to the intelligible presentation of the scientific results.

Brief outline of the course:
The seminar of the biophysics department oriented to the themes of the year's and diploma works.

Recommended literature:
The literature will be recommended by supervisors of the theses.

Course language:
English language

Notes:

Course assessment
Total number of assessed students: 17

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

Provides: doc. Mgr. Daniel Jancura, PhD.

Date of last modification: 17.09.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ SBFe/03	**Course name:** Biophysical Seminary

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

Number of ECTS credits: 1

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities:

Conditions for course completion:
The active presence on the seminars.

Learning outcomes:
To teach students of the individual scientific work in the frame of the year's and diploma thesis and lead them to the intelligible presentation of the scientific results.

Brief outline of the course:
The seminar of the biophysics department oriented to the themes of the year's and diploma works.

Recommended literature:
The literature will be recommended by supervisors of the theses.

Course language:
English language

Notes:

Course assessment
Total number of assessed students: 12

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

Provides: doc. Mgr. Daniel Jancura, PhD.

Date of last modification: 17.09.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ SBFf/03	**Course name:** Biophysical Seminary

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

Number of ECTS credits: 1

Recommended semester/trimester of the course: 4.

Course level: II.

Prerequisities:

Conditions for course completion:
The active presence on the seminars.

Learning outcomes:
To teach students of the individual scientific work in the frame of the year's and diploma thesis and lead them to the intelligible presentation of the scientific results.

Brief outline of the course:
The seminar of the biophysics department oriented to the themes of the year's and diploma works.

Recommended literature:
The literature will be recommended by supervisors of the theses.

Course language:
English language

Notes:

Course assessment
Total number of assessed students: 8

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

Provides: doc. Mgr. Daniel Jancura, PhD.

Date of last modification: 17.09.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/MSSBF/14	**Course name:** Biophysics

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: ÚFV/MOS/14 and ÚCHV/BCH1a/03 and ÚFV/BFB1/14 and ÚFV/CHV1/03 and ÚFV/MBF1/14 and ÚFV/ZBMB/14 and ÚFV/FCH1/02 and ÚCHV/BCH1b/03 and ÚCHV/STA1/03

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 15

A	B	C	D	E	FX
40.0	26.67	26.67	6.67	0.0	0.0

Provides:

Date of last modification: 30.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ BFB1/14	**Course name:** Cell Biophysics I

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: 4

Recommended semester/trimester of the course: 3.

Course level: I., 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: 30

A	B	C	D	E	FX
43.33	23.33	13.33	20.0	0.0	0.0

Provides: RNDr. Gabriela Fabriciová, PhD.

Date of last modification: 12.07.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KF/ KDF/05	**Course name:** Chapters from History of Philosophy of 19th and 20th Centuries (General Introduction)

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 10

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

Provides: PhDr. Dušan Hruška, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

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

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

Number of 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. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚCHV/VMS1/03	**Course name:** Computing Methods in X-Ray Structure Analysis

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/STA1/03

Conditions for course completion:
Semester project - student has to solve and describe a crystal structure of unknown sample.

Learning outcomes:
Crystal structure analysis of simple samples, tabular and graphical processing of the results.

Brief outline of the course:
Practical course of crystal structures solution for substances with the number of atoms less than 200 since the data processing to publishing structures: selection of the correct space group and generate the necessary files for the structure solution (Wingx); search for the model of the structure (SHELX and SUPERFLIP), refinement of the model (SHELX); graphical representation of the structure (DIAMOND); calculations of bond lengths, angles and hydrogen bonds (PARST); tabulation of the results of crystal structure analysis, obtaining the necessary data for similar structures from the Cambridge Structural Database System. Processing of results of powder diffraction technique, modeling of powder diffraction patterns (MERCURY).

Recommended literature:
Manuals for the programs.

Course language:
Slovak and 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: 76

A	B	C	D	E	FX
84.21	9.21	2.63	3.95	0.0	0.0

Provides: doc. RNDr. Ivan Potočňák, PhD.

Date of last modification: 21.07.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/DPO/21	**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: 20

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 7

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

Provides:

Date of last modification: 22.02.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

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: 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: 159

A	B	C	D	E	FX
37.11	23.9	16.35	14.47	7.55	0.63

Provides: doc. RNDr. Erik Sedlák, DrSc.

Date of last modification: 14.11.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ EMBF/14	**Course name:** Experimental Methods of Biophysics

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: 4

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:
1. J.E. Landbury and B.Z. Chowdhry, Biocalorimetry: Application of calorimetry in the biological sciences, Wiley, 1998
2. Alice L. Givan: Flow Cytometry, first principles, second edition, Wiley, 2001
3. Joseph R. Lakowicz: Principles of Fluorescence Spectroscopy, Third edition, Springer 2006
4. Ewa M. Goldys: Fluorescence Applications in Biotechnology and the Life Sciences, 2009, Wiley-Blackwell

Course language:

Notes:

Course assessment
Total number of assessed students: 14

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

Provides: doc. RNDr. Katarína Štroffeková, PhD., doc. RNDr. Erik Sedlák, DrSc., RNDr. Gabriela Fabriciová, PhD., RNDr. Marián Fabián, CSc., doc. RNDr. Gabriel Žoldák, PhD.

Date of last modification: 25.02.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ ZBMB/14	**Course name:** Fundamentals of Cellular and Molecular Biology

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.

Course level: II.

Prerequisities:

Conditions for course completion:
Exam.
Student is able to demonstrate knowledge in the field of cellular and molecular biology, is able to promptly answers asked questions and design a simple experiment focused on monitoring of intracellular events.

Learning outcomes:
The aim of the course is to provide an overview in the field of cell and molecular biology. Emphasis is placed on the functions of intracellular compartments and cell signaling. Exercises are focused on working with cell cultures, preparation of solutions and samples for microscopy and cytometry.

Brief outline of the course:
1. week
Chemical composition of the living and inanimate world. Chemical composition of the cell (chemical bonds, water, molecules and macromolecules in cells) Cell - the basic structural and functional unit of a living organism. Light, fluorescence and electron microscopy, cell fractionation.
2. week
Catalysis and energy utilization (synthesis and oxidation of organic molecules, electron transporters, ATP). Degradation of sugars and fats (fermentation, glycolysis, oxidative phosphorylation)
3. week
Information macromolecules (proteins and nucleic acids). Shape, structure and functions of proteins. Structure and function of DNA. DNA replication. Mutations and their significance. DNA repair.
4. week
Chromosomes (nucleus, organization of DNA in interphase, nucleosomes as a basic structural units of chromatin, condensation of chromosomes). Cell division (mitosis, meiosis).
5. week
Expression of genetic information. Transfer of information from DNA to protein. Structure and function of RNA (mRNA, tRNA, rRNA, small RNA molecules). Transcription. Regulation of gene expression (DNA-binding proteins, RNA polymerase and transcription factors).
6. week

Membrane structure. Lipid bilayer (fluidity and asymmetry of lipid membranes). Membrane proteins and their importance. Plasma membrane and cell surfaces. Transport of substances across membranes (passive transport, active transport, transporters, ion channels, membrane potential, signal transmission in nerve cells.
7. week
Energy acquisition in mitochondria and chloroplasts. Mitochondrial membranes and oxidative phosphorylation. Electron transport and cellular respiration. Chloroplasts (structure and function). Photosynthesis. DNA in mitochondria and chloroplasts.
8. week
Intracellular compartments and transport of substances. Membrane organelles (structure and functions). Protein sorting, vesicular transport, secretory pathways and endocytosis.
9. week
Cell communication (general principles of cell signaling, signaling molecules, messengers, receptors on membranes, intracellular signaling cascades). G-protein coupled receptors. Receptors associated with enzymes (tyrosine kinases).
10. week
Cytoskeleton. Intermediate filaments. Microtubules (centrosome, molecular motors and intracellular transport). Actin fibers (actin-myosin, cell movement).
11. week
Cell division. Cell cycle. Cell cycle control (cyclins and cyclin-dependent kinases). Regulation of cell number and cell death (types of cell death). Disorders of cell cycle control, carcinogenesis.
12. week
Cell differentiation and aging.

Recommended literature:

1. K. Kapeller, H. Strakele, Cytomorfológia, Osveta, Martin 1999.
2. G. M. Cooper, The cell a molecular approach, ASM Press, Washington 2000.
3. J. D. Watson, molekulární biologie genu, Acadenie, Praha 1982.
4. J. Darnell, H. Lodish, D. Baltimore: Molecular Cell Biology, W. H. Freeman and Co., New York 1990. 5. S. Rosypal, Úvod do molekulární biologie I, II, III, Brno 1997.

Course language:

Notes:

Course assessment

Total number of assessed students: 33

A	B	C	D	E	FX
60.61	27.27	6.06	0.0	6.06	0.0

Provides: prof. RNDr. Pavol Miškovský, DrSc., RNDr. Zuzana Naďová, PhD.

Date of last modification: 21.09.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KF/ DF2p/03	**Course name:** History of Philosophy 2 (General Introduction)

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

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: I., II.

Prerequisities:

Conditions for course completion:
The condition for awarding the evaluation will be the active approach of students to fulfilling their study obligations, independent work with selected philosophical texts in the library, active participation and creative work in seminars. In connection with the possibility of interrupting face-to-face teaching, there will be greater demands on the student's independent study and the processing of professional literature, which will be continuously evaluated, using e-mail to communicate with the teacher, at the end of the semester, preparing and handing in the semester's seminar work by the set date, or also passing a knowledge test - about which the students will be informed in advance in sufficient time.

Learning outcomes:
Deepening knowledge about the development of spiritual culture in the European spiritual space and pointing out the most important sources of this development: (1) ancient philosophy and science, (2) Christianity as the second pillar of Europe, (3) the Renaissance and the emergence of modern science (mathematical natural science) as the third pillar of European development. Development of critical thinking skills, active position in professional (ethics of science), public and private life (ethics of responsibility). Transcending narrowly specialized views of the world.

Brief outline of the course:

Recommended literature:
Antológia z diel filozofov. Predsokratovci a Platon. Zost. J. Martinka. Bratislava: Nakladateľstvo Epocha 1970; Antológia z diel filozofov. Od Aristotela po Plotina. Zost. J. Martinka. Bratislava: Nakladateľstvo Pravda 1972. Predsokratovci a Platon. Antológia z diel filozofov. Zost. J. Martinka. Bratislava: Vydavateľstvo Iris 1998. Od Aristotela po Plotina. Antológia z diel filozofov. Zost. J. Martinka. Bratislava: Vydavateľstvo IRIS 2006. Anzenbacher,A.: Úvod do filozofie. Prel. K. Šprunk. Praha: SPN 1990. Barthes, R.: Mytologie. Prel. J. Fulka. Praha: Dokořán 2004. Bělohradský, V.: Společnost nevolnosti. Eseje z pozdější doby. Praha: SLON 2009. Benjamin, W.: Iluminácie. Prel. A. Bžoch; J. Truhlářová. Bratislava: Kalligram 1999. Borges, J. L.: Borges ústne. Prednášky a eseje. Prel. P. Šišmišová. Bratislava: Kalligram 2005. Cassirer, E.: Esej o človeku. Prel. J. Piaček. Bratislava: Nakladateľstvo Pravda 1977. Debord, G.: Společnost spektáklu. Prel. J. Fulka; P. Siostrzonek. Praha: Nakladatelství :intu: 2007. Farkašová, E.: Na rube plátna. Bratislava: Vydavateľstvo Spolku slovenských spisovateľov 2013.

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

Course language:

Notes:

Course assessment
Total number of assessed students: 746

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

Provides: doc. PhDr. Peter Nezník, CSc.

Date of last modification: 11.07.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KF/ IH2/03	**Course name:** Idea Humanitas 2 (General Introduction)

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities:

Conditions for course completion:
100% graded credit: 40% (evaluated participation in seminars, processing of partial seminar work - separate assignment) 60% (final seminar work - student project). In the case of implementation of the classical form of teaching - face-to-face - active participation of the student in the seminar; study and reflection of assigned philosophical texts, attempt to interpret them. In the case of the introduction of distance education (as was the case due to Covid-19), the student will have to actively fulfill tasks of a partial nature, where increased demands will be placed on the student and his independent work with philosophical texts and literature. Tasks will be assigned to the students by the teacher on an ongoing basis. The student must study the assigned philosophical texts, think through and process them, submit them as a seminar paper, i.e. in written form. In both cases, the study of literature is necessary to pass the subject. The conclusion of the subject is the preparation of a seminar paper - the final seminar paper - in the range of at least 10 - 12 pages of A4 (with compliance with the bibliographic standard of the Department of Philosophy (KF) for seminar and qualification papers).

Learning outcomes:
To supplement and expand the interest of natural science students in social science issues related to the issues of the development of philosophy, science and human leadership, which are manifested in the urgent problems of today's world and society. Special emphasis is placed on the formation of humanistic ideas, their origin, transformation and possible pitfalls and risks. In addition to thinking about serious questions of the past and present, it also includes thinking about the present and the current contexts of major topics in philosophy and Western culture in particular. Therefore, the preparation and implementation of a program aimed at cooperation with alternative directions of pedagogy in the conditions of our transforming education system is understood as a practical output.

Brief outline of the course:
The age of the image of the world. Doubt as a principle of philosophy. The emergence of the image of the world (Weltbild); the differences of ancient theoria, medieval scientia, the emergence of mathematical natural science. Science as an operation (Betrieb); institutionalization of science. Philosophy, science and the modern world. The movement of human life: acceptance, defense, freedom as struggle, submission to finitude. The modern world and the search for meaning. Bureaucracy, impersonality, predominance of technocratic approaches. Fatigue as a modern threat

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

Recommended literature:

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

Course language:

Notes:

Course assessment

Total number of assessed students: 12

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

Provides: doc. PhDr. Peter Nezník, CSc.

Date of last modification: 24.08.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ MOS/14	**Course name:** Methods of Optical Spectroscopy
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.	
Course level: II.	
Prerequisities:	
Conditions for course completion: Exam.	
Learning outcomes: Basic knowledge of optical spectroscopy for biophysical applications.	
Brief outline of the course: Theory of light-matter interactions. Molecular motions and the corresponding spectra – Born-Oppenheimer approximation, general scheme of transitions in complicated organic molecules. Probability of spontaneous and stimulated transitions. Basic scheme of an optical spectroscopic apparatus. Infrared spectroscopy (vibrations of diatomic and polyatomic molecules, anharmonicity of vibrations, characteristic vibrations, experimental methods of infrared spectroscopy, biophysical applications of infrared spectroscopy). Raman scattering (physical principles, experimental arrangements, biophysical applications). Electronic spectroscopy (electron states of diatomic and polyatomic molecules – electronic spectra, Franck-Condom principle, polarization of electronic spectra, experimental arrangements, biophysical applications). Emission spectroscopy (luminescence quantum yield and intensity, lifetime of excited states, experimental arrangements, biophysical applications).	
Recommended literature: 1. Biophysics, Springer-Verlag, Heidelberg 1983. 2. J. Michael Hollas: Modern Spectroscopy, forth editionJohn Wiley, England 2004 3. P. Miškovský a kol., Praktikum k experimentálnym metódam biofyziky I, skriptum PF UPJŠ Košice 1989. 4. V. Prosser a kol., Experimentální metody biofyziky, Academia, Praha 1989. 5. P. Atkins, J. de Paula, Physical Chemistry, Oxford University Press, New York 2002.	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 29

A	B	C	D	E	FX
20.69	27.59	44.83	3.45	3.45	0.0

Provides: prof. RNDr. Pavol Miškovský, DrSc.

Date of last modification: 30.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ MBF1/14	**Course name:** Molecular Biophysics I

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.

Course level: I., 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: 32

A	B	C	D	E	FX
59.38	28.13	9.38	0.0	3.13	0.0

Provides: RNDr. Gabriela Fabriciová, PhD.

Date of last modification: 24.11.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ CHV1/03	**Course name:** Molecular Structure and Chemical Bonding

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:

Conditions for course completion:
Elaboration of the project - characterization of the chosen molecule using methods mentioned in the course. Exam. Written form, including Q/A part allowed due to corona-virus measures.

Learning outcomes:
Attendees will learn actual methods used for computer simulations of molecules. By using practical examples he/she will get hands-on experience with standart methods.

Brief outline of the course:
Born-Oppenheimer approximation. Methods and approaches of classical molecular mechanics. Force fields and force constants for polyatomic simulations. Force fields for biomolecular simulations (CHARMM, AMBER, MM2-4, MMFF, CVFF,...). Independent electron approximation. Hartree-Fock self-consistent field method. Post Hartee-Fock methods. Density functional theory (DFT) - basic principles and implementation. LSDA approximation and gradient corrected methods. Hybrid methods. Wavefunction and electron density analysis. Limits and perspectives of classical and quantum molecular mechanics. Alternativ methods. Ab initio computations and experimental observables. Experimental and computational observables. Molecular dynamics and stochastic methods. Integration algorithms. Car-Parinello dynamics.

Recommended literature:
1. Leech: Molecular Modeling: Principles and Applications, Longmann, 1996.
2. M.P. Allen, D.J. Tildesley: Computer Simulation of Liquids, Oxford University Press, 1989.
3. Polák, Zahradník: Kvantová chemie, SNTL/Alfa , 1985.
4. P. W. Atkins, R. S. Friedman: Molecular Quantum Mechanics.Oxford University Press, 1997

Course language:

Notes:

Course assessment
Total number of assessed students: 51

A	B	C	D	E	FX
62.75	21.57	11.76	3.92	0.0	0.0

Provides: doc. RNDr. Jozef Uličný, CSc.
Date of last modification: 08.09.2021
Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ NOT1a/03	**Course name:** Nontraditional Optimization Techniques 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: I., II.

Prerequisities:

Conditions for course completion:
Oral examination (50%), results and quality of the
personal presentation of the projects (50%).
Monitoring progress in solving applied projects. From given set of problems, the student must pick 1 to 3 projects and develop functioning implementation of the solution in form of computer program. In case of more challenging problems, collaborative work of students is acceptable, but each student must be able to present her/his individual contribution.

Learning outcomes:
To familiarize students with biologically and physically inspired optimization, simulation and prediction techniques. To expand students' creativity and programming skills by applying heuristic techniques in solving applied problems.
Upon successful completion of course, student shall possess knowledge about most typical non-traditional optimization techniques, as well as practical experience of solving concrete problems.

Brief outline of the course:
1. Fundamentals terms and definitions of optimization theory. Physical laws as optimization tasks. Variational principle.
2. Model optimization problems. Basic types of objective functions. Classification of optimization methods. Computational scaling of optimization methods. Big O notation. Parallelization, Metcalf's law, Amdahl's bottleneck.
3. Exhaustive search, Gradient-based optimization techniques.
4. Evolutionary algorithms. Canonical Genetic algorithm. Genetic algorithms as Markov processes. Statistical Mechanics description of Genetic Algorithms.
5. Monte Carlo simulation and simulated annealing. Metropolis algorithm and statistics of sampling in solution space.
6. Swarm optimization. Ant algorithms.
7. Cellular Automata and their applications in simulations of complex systems.
8. data structures and representation of solution space and optimization problems. Compression of information and symmetry. Manifolds.
9. Generators. grammars and languages. Genetic programming. AST and operations on AST representation of programs.

10. Fractals. Lindenmayer systems. Life-like and agent-based models.
11. Evolutionary games. Evolution of cooperation.
12. Fundamentals of Neural Networks. Stochastic gradient optimization.

Recommended literature:

Hartmann, A. K., Rieger, H., Optimization Algorithms in Physics, Wiley, 2002
Reeves, C. R., Rowe, J. E., Genetic Algorithms: Principles and perspectives, Kluwer, 2003
Mitchell, M., Complexity. A Guided Tour, Oxford University Press, 2009
Solé, R. V., Phase Transitions, Princeton University Press, 2011
Ilachinski, A., Cellular Automata. A Discrete universe, World Scientific, 2002
Haykin, S., Neural Networks. A Comprehensive Foundation, Prentice-Hall, 1999
Actual literature and data related to problem sets

Course language:

English language is essential for students as "lingua franca" for the latest advancements and applications of optimization techniques.

Notes:

The subject is taught using direct contact form. Should the epidemiological situation (or other relevant circumstances) mandate, the distant form will be used, preferentially using MS Teams learning environment.

Course assessment

Total number of assessed students: 94

A	B	C	D	E	FX
68.09	19.15	7.45	2.13	3.19	0.0

Provides: doc. RNDr. Jozef Uličný, CSc.

Date of last modification: 22.11.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ NOT1b/03	**Course name:** Nontraditional Optimization Techniques 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: 5

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

Course level: I., II.

Prerequisities:

Conditions for course completion:
Presentation of the project in written form. Oral exam and discussion of the presented project. Should corona-virus quarantine persist, written report and answer to posed questions suffice.

Learning outcomes:
By using examples from the biology to learn applications of optimization techniques on study and interpretation of complex systems. Introduction to new paradigms in the area of systems biology, including parasite/host coevolution.

Brief outline of the course:
Complex systems, emergent behavior. Evolutionary theory and memetics. Application of optimization techniques on complex systems. Application of methods /genetic algorithms, simulated annealing, taboo search/ on selected problems of biomolecular simulations. Molecular dynamics, protein folding. Population dynamics, metabolic networks and complexity in bioinformatics.

Recommended literature:
The actual scientific papers.

Course language:

Notes:

Course assessment
Total number of assessed students: 55

A	B	C	D	E	FX
87.27	5.45	5.45	1.82	0.0	0.0

Provides: doc. RNDr. Jozef Uličný, CSc.

Date of last modification: 08.09.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ FChFB/14	**Course name:** Photochemistry and photobiology

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: 3

Recommended semester/trimester of the course: 3.

Course level: II.

Prerequisities:

Conditions for course completion:
presentation, oral exam

Learning outcomes:
Introduction to a problematic of light interaction with biological systems, especially the role of light activated molecules in biology and medicine. Description of relevant spectral, photochemical and photobiological concepts used in this field. Besides basic knowledge in photochemistry and photobiology students will be familiar with methods and detection systems applied in this area. Applications will be focused to a light activated therapy.

Brief outline of the course:
Lectures: 1. tissue optics, 2. detection and applications of endogenous and exogenous fluorophores , 3. photophysics, 4. photochemistry, 5. photobiology, 6. technics used in light-activated therapies
Presentation: oral presentation of new trends in photophysics, photochemistry and photobiology.

Recommended literature:
Mycek & Pogue, "Handbook of Biomedical Fluorescence", Dekker, 2003.
R. Splinter & B.A. Hooper, "An introduction to Biomedical Optics", Taylor&Francis, 2007.
Lakowicz, “Principles of fluorescence spectroscopy“, Springer 2006.
Muzykantov & Torchilin, “Biomedical aspects of drug targeting“, Kluwer Academic Publishers 2002

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 8

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

Provides: prof. RNDr. Pavol Miškovský, DrSc., RNDr. Veronika Huntošová, PhD.

Date of last modification: 03.05.2015

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/FOT/14	**Course name:** Photonics

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: 3

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
Oral exam where the students present theoretical knowledge of topics listed in the course syllabus and demonstrate the ability to find connections between the different areas of photonics and optics.

Learning outcomes:
Students completing the course will gain basic knowledge in the field of photonics with a focus on the practical use of optical phenomena for scientific purposes. Students will also get an overview of optical components and equipment that are used in photonic and/or laser experiments.

Brief outline of the course:
1. Ray optics.
2. Wave optics.
3. Beam optics.
4. Electromagnetic optics.
5. Polarization optics.
6. Photon optics.
7. Resonator optics.
8. Laser amplifiers.
9. Lasers.
10. Optical devices: acousto-optics.
11. Optical devices: electro-optics.
12. The basics of non-linear optics.

Recommended literature:
1. B. E. A. Saleh, M. C. Teich, Fundamentals of Photonics, John-Wiley & Sons 2007 New Jersey
2. W. Demtroder, Laser Spectroscopy, Springer-Verlag 2008 Berlin

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 17

A	B	C	D	E	FX
23.53	47.06	29.41	0.0	0.0	0.0

Provides: prof. RNDr. Pavol Miškovský, DrSc., doc. Mgr. Gregor Bánó, PhD.

Date of last modification: 22.09.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ FCH1/02	**Course name:** Physical Chemistry for Biological Sciences

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

Number of ECTS credits: 6

Recommended semester/trimester of the course: 1.

Course level: I., II.

Prerequisities:

Conditions for course completion:
Test
Exam
During an exam, a student should demonstrate his/her ability to solve theoretical exercises from the selected parts of the Physical chemistry for biological sciences. Morever, the students should be able to manifest theoretical knowledge from the chapters which are present in the brief outline of the course.

Learning outcomes:
The introduction into the fundamental knowledge of selected parts of physical chemistry with emphasis on the utilization of these knowledge for the study of physico-chemical properties of biomacromolecules and biological systems. After completing the course, the students should understand physico-chemical mechanisms of many biological processes.

Brief outline of the course:
Week 1
Physical chemistry - areas of research, importance for science, definition. Thermodynamics - definition, areas of interest. Thermodynamic system. Properties of thermodynamic system. Basic thermodynamic quantities (pressure, volume, temperature, internal energy). Zero law of thermodynamics. Ideal gas. Equation of state of an ideal gas. Gas mixtures - Dalton's law. Real gas. Van der Waals equation of state.
Week 2
1st law of thermodynamics. Internal energy, work, heat. Mathematical formulation of the 1st law of thermodynamics. Enthalpy. Heat capacity. Relationship between heat capacities at constant pressure and volume. Isothermal expansion of an ideal gas. Work in reversible and irreversible isothermal expansion. Adiabatic expansion of an ideal gas. Exothermic and endothermic reactions and processes. Standard state of substances. Hess's law.
Week 3
Examples of spontaneous processes in nature. Definitions of the 2nd law of thermodynamics (Kelvin, Celsius). Entropy - introduction of the term. Thermodynamic definition of entropy. Entropy as a state function. Carnot cycle. Efficiency of a heat engine. Claussius inequality. Entropy

of isothermal expansion, gas mixing, melting and evaporation processes. Dependence of entropy on temperature. Nernst's heat theorem. 3rd law of thermodynamics.
Week 4
Entropy as a property determining the spontaneity of processes. Criteria of process spontaneity at constant volume and constant pressure. Helmoltz and Gibbs free energy. Properties of Helmoltz energy. Properties of Gibbs energy. Standard Gibbs energy of a chemical reaction. Dependence of Gibbs energy on temperature - Gibbs-Helmoltz equation. Dependence of Gibbs energy on pressure for solids, liquids and gases. Simple mixtures. Partial molar volume. Partial molar Gibbs energy, chemical potential.
Week 5
Chemical potential in a liquid. Raoult's law, the ideal solution. Henry's law, ideally diluted solution. Mixing solutions, ideal solutions. Residual functions and regular solutions. Colligative properties. Increasing the boiling point and decreasing the melting point of the liquid in which the soluble chemical compound is located. Osmosis. Solvent activity, soluble substance activity.
Week 6
Chemical equilibrium. Gibbs energy of a chemical reaction. Chemical equilibrium in an ideal gas. Equilibrium constant of chemical reaction. Temperature dependence of the equilibrium constant - van‘t Hoff's equation. Stability of protein structure. Thermal denaturation of proteins. Van’t Hoff enthalpy of protein denaturation. Chemical denaturation of proteins. Physiological consequences of incorrectly folded proteins.
Week 7
Examples of molecular associations and their significance for biological systems. Dissociation and association binding constants. Determination of dissociation binding constant - Langmuir isotherm. Cooperativity in ligand-macromolecule interactions. Cooperativity - simultaneous ligand binding, Hill's equation. Cooperativity - gradual binding of ligands. Allosteric interactions. Qualitative description of the Monod - Wyman - Changeaux model for cooperative binding of ligands to macromolecules. Experimental methods used to study the ligand - macromolecule interactions.
Week 8 Chemical and biochemical kinetics - basic definitions. Rates of chemical reactions. Rate constant. Order of chemical reaction. First order reactions. Second order reactions. Consecutive reactions. Determination of the rate law. Reverse chemical reactions. Relaxation processes. Temperature dependence of rate constants - Arrhenius equation. Experimental techniques used to determine the rates of chemical reactions. Transition state theory - Eyring's theory.
Week 9
Enzymes - characterization and classification. Equilibrium model of enzyme kinetics. Steady state model of enzyme kinetics. Experimental determination of maximum rate and Michaelis-Menten constant in enzymatic reactions. Deviations from Michaelis-Menten kinetics. Enzyme inhibition. Reversible inhibition. Competitive, non-competitive and uncompetitive inhibition.
Week 10
Kinetics of photophysical and photochemical processes. Jablonski diagram. Fluorescence, phosphorescence. Quantum yields of photophysical processes. Quenching of the excited states of molecules by external factors. Fluorescence quenching. Stern-Volmer equation. Förster resonance energy transfer (FRET). Biological application of FRET.
Week 11
Electrochemical reactions. Electrochemical cell. Standard redox potentials. Relationship between Gibbs energy change and electrochemical potential. Temperature dependence of electrochemical potential. Use of electrochemical cells. Determination of redox potential. Ionic electrochemical gradient. Proton motive force. Nernst potential. Introduction to the respiratory chain in mitochondria.
Week 12

Acids and bases. Acid-base properties of water. pH - measurement of environmental acidity. Dissociation of acids and bases - acid-base equilibrium. Henderson - Hasselbalch equation. Buffers.

Recommended literature:

1. P. Atkins and J. de Paula. Atkins's Physical Chemistry (9th Edition), Oxford University Press, 2010.
2. P. Atkins. Fyzikálna chémia (slovenský preklad 6. vydania), STU Bratislava, 1999.
3. P. Atkins, J. De Paula. Fyzikální chemie (český preklad 9. vydania), VŠCHT Praha, 2013
4. R.Chang. Physical Chemistry for the Biosciences, University Science Book, 2006.
5. D. Eisenberg and D. Crothers. Physical Chemistry with Applications to the Life Sciences, Benjamin/Cummings, 1979.
6. K. van Holde, W. Johnson and P. Ho. Principles of Physical Biochemistry, Prentice Hall, 1988.
7. D.T. Haynie. Biological Thermodynamics (2nd Edition), Cambridge University Press, 2008.
8. A.P.H. Peters. Concise Chemical Thermodynamics (3rd Edition), CRC Press, Taylor & Francis Group, 2010.
9. I. Tinoco, jr., K. Sauer, J.C. Wang, J.C. Puglisi, G. Harbison and D.Rovnyak. Physical Chemistry – Principles and Applications in Biological Sciences (5th Edition), Pearson, 2014.
10. A. Cooksy. Physical Chemistry- Thermodynamics, Statistical Mechanics, and Kinetics, Pearson, 2014.

Course language:
English language

Notes:

Course assessment
Total number of assessed students: 112

A	B	C	D	E	FX
19.64	28.57	30.36	11.61	9.82	0.0

Provides: doc. Mgr. Daniel Jancura, PhD.

Date of last modification: 17.09.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/PRb/04	**Course name:** Practical excercises in methods of optical spectroscopy

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: 3

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities: ÚFV/MOS/14

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:
1. V. Prosser a kol., Experimentální metody biofyziky, Academia, Praha 1989.
2. S. Miertus a kol., Atómová a molekulová spektroskopia, Alfa, Bratislava 1991.
3. P. Jasem a kol., Praktikum k experimentálnym metódam biofyziky, PF UPJŠ, Košice 1990.
4. I.N. Serdyuk, N.R. Zaccai and J. Zaccai, Methods in molecular biophysics, Cambridge University Press, 2007.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 15

A	B	C	D	E	FX
93.33	6.67	0.0	0.0	0.0	0.0

Provides: RNDr. Gabriela Fabriciová, PhD.

Date of last modification: 30.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ PEMBF/14	**Course name:** Practical exercises in experimental methods of biophysics

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: 3

Recommended semester/trimester of the course: 4.

Course level: II.

Prerequisities: ÚFV/EMBF/14

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:
1. J.E. Landbury and B.Z. Chowdhry, Biocalorimetry: Application of calorimetry in the biological sciences, Wiley, 1998
2. Alice L. Givan: Flow Cytometry, first principles, second edition, Wiley, 2001
3. Joseph R. Lakowicz: Principles of Fluorescence Spectroscopy, Third edition, Springer 2006
4. Ewa M. Goldys: Fluorescence Applications in Biotechnology and the Life Sciences, 2009, Wiley-Blackwell

Course language:

Notes:

Course assessment
Total number of assessed students: 11

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

Provides: doc. RNDr. Erik Sedlák, DrSc., RNDr. Gabriela Fabriciová, PhD., doc. RNDr. Katarína Štroffeková, PhD., RNDr. Marián Fabián, CSc.

Date of last modification: 30.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: KPPaPZ/PPZMg/12	**Course name:** Psychology and Health Psychology (Master´s Study)

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

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
Conditions for the continuous assessment during the semester:
Active work (maximum 5 points, 2 absences are allowed).
Preparation, presentation and discussion on a selected topic - max. 15 points.
Written examination (maximum 30 points).
Conditions for admission to the exam: min. 25 points.
Conditions for the final assessment:
Exam: written form (max. 50 points, min. 25 points)
Conditions for successful completion of the course: participation in lessons, fulfillment of assignments and at least 66 points from the overall evaluation.
Detailed information in the electronic bulletin board of the course in AIS2. The teaching of the subject will be realized by a combined method.

Learning outcomes:
The student will understand the basic concepts and theories of health psychology, can explain salutogenic factors as well as the consequences of risk behavior related to health. He is able to apply the knowledge especially in the field of prevention of burnout syndrome and support of mental health in the work of a teacher.

Brief outline of the course:
1 Introduction to health psychology
2 Psychoimmunology
3 Personality factors and health
4 Social support as a protective factor in relation to health
5 Subjective well-being
6 Stress and stressful situations and ways to manage them
7 Burnout syndrome
8 Health-promoting behavior, mental hygiene
9 Health risk behavior
10 School as an important factor of health

Recommended literature:
Křivohlavý, J.: Psychologie zdraví. Portál, Praha 2001.

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

Course language:
slovak

Notes:

Course assessment
Total number of assessed students: 226

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

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

Date of last modification: 07.07.2021

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

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

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 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. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ SPBFa/14	**Course name:** Semestral thesis 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: 2

Recommended semester/trimester of the course: 1.

Course level: II.

Prerequisities:

Conditions for course completion:
Successful completing the course, requires the student to demonstrate adequate level of the assigned tasks set by the project leader at the beginning of the semester to the required extent and at the required level. The assignments are formulated by the teacher at the beginning of the semester, the project leader is usually the supervisor of the final thesis. Tasks include e.g. study of literature in the field, mastering the operation of experimental equipment, sample preparation technology, preparation and implementation of the experiment, processing of the obtained data, or collaborating during the preparation of a scientific publication. Credit evaluation takes into account the time requirements of the student when working on a semester project in the range of 50 hours per semester. Individual activities of the student are evaluated by the project leader, the overall work of the student is evaluated by points on a point scale of 0 - 100 points. The minimum threshold for obtaining a rating is 50% of the rating scale, which is determined as follows: A 100-91% B 90-81% C 80-71% D 70-61% E 60-50% Fx 49-0%.

Learning outcomes:
After completing the course, the student will acquire knowledge and skills associated with scientific work in the field of biophysics. By actively participating in individual research teams, students will extend their knowledge in the relevant part of biophysics, acquire experimental skills in operating contemporary scientific equipment, study of the literature will improve their language skills. Data processing resp. the creation of original software will improve their computer skills.

Brief outline of the course:
Program for semestral project is prepared individually for each student by supervisor of the project at the beginning of each semester and can be focused on search in literature for a selected area of research, preparation of experiment and its performing, creation of software for data acquisition and analysis, collaboration during preparation of manuscript, presentation of the obtained results for department audience. Supervisor of the project will specify the topic of the project.

Recommended literature:
The literature will be recommended by supervisors of individual works.

Course language:

Notes:

Subject Semester work I is realized in attendance form. If necessary (e.g. Covid pandemic) it is taught online using software MS Teams, which allows to maintain contact with students even in adverse conditions and also allows to meet the requirements of the subject.

Course assessment

Total number of assessed students: 11

A	B	C	D	E	FX
81.82	18.18	0.0	0.0	0.0	0.0

Provides:

Date of last modification: 30.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ SPBFb/14	**Course name:** Semestral thesis 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: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
Successful completing the course, requires the student to demonstrate adequate level of the assigned tasks set by the project leader at the beginning of the semester to the required extent and at the required level. The assignments are formulated by the teacher at the beginning of the semester, the project leader is usually the supervisor of the final thesis. Tasks include e.g. study of literature in the field, mastering the operation of experimental equipment, sample preparation technology, preparation and implementation of the experiment, processing of the obtained data, or collaborating during the preparation of a scientific publication. Credit evaluation takes into account the time requirements of the student when working on a semester project in the range of 50 hours per semester. Individual activities of the student are evaluated by the project leader, the overall work of the student is evaluated by points on a point scale of 0 - 100 points. The minimum threshold for obtaining a rating is 50% of the rating scale, which is determined as follows: A 100-91% B 90-81% C 80-71% D 70-61% E 60-50% Fx 49-0%.

Learning outcomes:
After completing the course, the student will acquire knowledge and skills associated with scientific work in the field of biophysics. By actively participating in individual research teams, students will extend their knowledge in the relevant part of biophysics, acquire experimental skills in operating contemporary scientific equipment, study of the literature will improve their language skills. Data processing resp. the creation of original software will improve their computer skills.

Brief outline of the course:
Program for semestral project is prepared individually for each student by supervisor of the project at the beginning of each semester and can be focused on search in literature for a selected area of research, preparation of experiment and its performing, creation of software for data acquisition and analysis, collaboration during preparation of manuscript, presentation of the obtained results for department audience. Supervisor of the project will specify the topic of the project.

Recommended literature:
The literature will be recommended by supervisors of individual works.

Course language:

Notes:

Subject Semester work I is realized in attendance form. If necessary (e.g. Covid pandemic) it is taught online using software MS Teams, which allows to maintain contact with students even in adverse conditions and also allows to meet the requirements of the subject.

Course assessment

Total number of assessed students: 10

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

Provides:

Date of last modification: 30.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚFV/ SPBFc/14	**Course name:** Semestral thesis III

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:
Successful completing the course, requires the student to demonstrate adequate level of the assigned tasks set by the project leader at the beginning of the semester to the required extent and at the required level. The assignments are formulated by the teacher at the beginning of the semester, the project leader is usually the supervisor of the final thesis. Tasks include e.g. study of literature in the field, mastering the operation of experimental equipment, sample preparation technology, preparation and implementation of the experiment, processing of the obtained data, or collaborating during the preparation of a scientific publication. Credit evaluation takes into account the time requirements of the student when working on a semester project in the range of 50 hours per semester. Individual activities of the student are evaluated by the project leader, the overall work of the student is evaluated by points on a point scale of 0 - 100 points. The minimum threshold for obtaining a rating is 50% of the rating scale, which is determined as follows: A 100-91% B 90-81% C 80-71% D 70-61% E 60-50% Fx 49-0%.

Learning outcomes:
After completing the course, the student will acquire knowledge and skills associated with scientific work in the field of biophysics. By actively participating in individual research teams, students will extend their knowledge in the relevant part of biophysics, acquire experimental skills in operating contemporary scientific equipment, study of the literature will improve their language skills. Data processing resp. the creation of original software will improve their computer skills.

Brief outline of the course:
Program for semestral project is prepared individually for each student by supervisor of the project at the beginning of each semester and can be focused on search in literature for a selected area of research, preparation of experiment and its performing, creation of software for data acquisition and analysis, collaboration during preparation of manuscript, presentation of the obtained results for department audience. Supervisor of the project will specify the topic of the project.

Recommended literature:
The literature will be recommended by supervisors of individual works.

Course language:

Notes:

Subject Semester work I is realized in attendance form. If necessary (e.g. Covid pandemic) it is taught online using software MS Teams, which allows to maintain contact with students even in adverse conditions and also allows to meet the requirements of the subject.

Course assessment

Total number of assessed students: 16

A	B	C	D	E	FX
93.75	0.0	6.25	0.0	0.0	0.0

Provides:

Date of last modification: 30.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: KPPaPZ/SPVKE/07	**Course name:** Social-Psychological Training of Coping with Critical Life Situations

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 126

abs	n	z
97.62	2.38	0.0

Provides: Mgr. Ondrej Kalina, PhD.

Date of last modification: 24.06.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I., I.II., 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:
Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess.
In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness.
In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.

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: 14548

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

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

Date of last modification: 29.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: I., I.II., 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:
Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess.
In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness.
In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.

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: 13211

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

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

Date of last modification: 29.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I., I.II., 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:
Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess.
In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness.
In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.

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: 8879

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

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

Date of last modification: 29.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I., I.II., 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:
Within the optional subject, the Institute of Physical Education and Sports of Pavol Jozef Šafárik University provides for students the following sports activities: aerobics, aikido, basketball, badminton, body form, bouldering, floorball, yoga, power yoga, pilates, swimming, body-building, indoor football, S-M systems, step aerobics, table tennis, tennis, volleyball and chess.
In the first two semesters of the first level of education students will master basic characteristics and particularities of individual sports, motor skills, game activities, they will improve level of their physical condition, coordination abilities, physical performance, and motor performance fitness. Last but not least, the important role of sports activities is to eliminate swimming illiteracy and by means of a special program of medical physical education to influence and mitigate unfitness.
In addition to these sports, the Institute offers for those who are interested winter and summer physical education trainings with an attractive program and organises various competitions, either at the premises of the faculty or University or competitions with national or international participation.

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: 5628

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

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

Date of last modification: 29.03.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚCHV/ STA1/03	**Course name:** Structure Analysis
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.	
Course level: II.	
Prerequisities:	
Conditions for course completion: 2 written tests during semester and written examination. The final evaluation is based on the results from the tests (30 %) and written examination (70 %). The student must obtain at least 51% of each test and exam. The same is valid also for online education.	
Learning outcomes: Students get an overview about the symmetry at the micro- and macrostructure level, about principles of difraction and about diffraction methods used for the crystal structure determination and they will learn how to use the results of the crystal structure analysis in their own work.	
Brief outline of the course: Macrostructure and microstructure symmetry, individual work with space groups. Theoretical basis of the diffraction experiment. Practical aspects of crystal structure solution. Processing the results of structural analysis. Theoretical basis, practical aspects and possibilities of X-ray powder diffraction analysis, its use at work of a chemist.	
Recommended literature: Massa, W.: Crystal structure determination, 2nd edition. Springer 2004. Clegg, W. et al.: Crystal structure analysis. Principles and practice. Oxford University Press 2009. Hahn, T.: International tables for crystallography, Vol. A. Kluwer Academic Publishers 2002. Klug, H.P. & Alexander, L.E.: X-Ray diffraction procedures for polycrystalline and amorphous materials. John Wiley & Sons, Inc. 1970.	
Course language: Slovak and 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: 144

A	B	C	D	E	FX
27.08	15.97	29.17	20.14	6.94	0.69

Provides: doc. RNDr. Ivan Potočňák, PhD.

Date of last modification: 21.07.2022

Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚFV/ SVKB/14	**Course name:** Student Scientific Conference
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:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 1

abs	n
100.0	0.0

Provides:
Date of last modification: 30.11.2021
Approved: prof. RNDr. Pavol Miškovský, DrSc.

COURSE INFORMATION LETTER

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

Course type, scope and the method:
Course type: Practice
Recommended course-load (hours):
Per week: 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. Pavol Miškovský, DrSc.