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COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ EFZ1/03	**Course name:** Animal and Human Ecophysiology

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:
Elaboration of semestral thesis.

Learning outcomes:
To understand the basic mechanisms of adaptations to environmental factors in animals and humans.

Brief outline of the course:
1. Definition of the subject. External environment characteristics. Environmental factors, classification, time factor. Reaction, adaptation, deformation. Classification of adaptations. Stress reaction, general adaptation syndrome.
2. Pathological reaction, pathological state, disease. General characteristics of disease – pain, fever, inflammation.
3. Ageing, theories, physiological changes in ageing. Death of organism. Adaptations to food intake changes and food composition. Food intake regulation.
4. Caloric restriction, starving, increased caloric intake, obesity. Time factor in food intake.
5. Thermoregulation, heat and cold adaptations. Hibernation, diapause.
6. Altitude and hyperbaric adaptations. Osmoregulation.
7. The effects of hypergravity and microgravity, physiological changes during space flight. Sound, ultrasound, infrasound effects.
8. Electromagnetic fields. Effects of electric current. Infrared, visible, ultraviolet radiation and their significance for organisms. Microwaves. Laser.
9. Ionising radiation, classification, sources. The effects of ionising radiation.
10. Xenobiotics, biotransformation. Air, water, and soil pollutants.
11. Drug abuse, mechanism of drug action. The effects of opioids and CNS depressants – sedatives, hypnotics, and alcohol.
12. The effects of CNS stimulants – amphetamines, cocaine, methylxanthines, nicotin. The effects of hallucinogens and solvents.
13. Carcinogenesis, chemical, physical, and biological carcinogens. Oncogenes, tumour suppressor genes. Prevention of carcinogenesis. Prions.

Recommended literature:
1. Piantadosi C.A. Biology of Human Survival: Life and Death in Extreme Environments. Oxford Press 2003.

2. Wilmer P and co.: Environmental Physiology of Animals. Blackwell Publishing Inc., 2004
3. Chown SL, Nicolson SW: Insect Physiological Ecology. Oxford University Press 2004

Course language:

Notes:

Course assessment
Total number of assessed students: 451

A	B	C	D	E	FX
14.19	22.62	22.62	23.06	16.41	1.11

Provides: doc. RNDr. Bianka Bojková, PhD.

Date of last modification: 14.07.2022

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ AMK/15	**Course name:** Applied Microbiology

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:

Course level: II., III.

Prerequisities:

Conditions for course completion:
Attendance of practicals (at least 90%), final examination

Learning outcomes:
The students will acquire in-depth knowledge on the important role of microoganisms in different fields like food (production of beer, wine, milk products, probiotics), chemical and pharmaceutical industry (production of vitamins, hormones, amino acids, enzymes, comodity chemicals), vaccines and their production, wastewater treatment, as well as microbial bioremediation, biofuels and biomining.

Brief outline of the course:
Application of bacteria in industrial processes, biochemicals production. Application of recombinant DNA techniques in industry. Lactic acid bacteria and its application in food industry. Microbiology in food quality control. Application of microorganisms in environment protection – wastewater treatment, bioremediation, biofuels, microbiology of biogas plants.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 60

A	B	C	D	E	FX	N	P
56.67	16.67	13.33	3.33	0.0	0.0	0.0	10.0

Provides: doc. RNDr. Peter Pristaš, CSc., univerzitný profesor, RNDr. Lenka Maliničová, PhD., RNDr. Jana Kisková, PhD., RNDr. Ivana Slepáková, PhD., RNDr. Mariana Kolesárová, PhD.

Date of last modification: 23.06.2022

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ AEN1/03	**Course name:** Applied entomology

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

Number of ECTS credits: 5

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 133

A	B	C	D	E	FX
54.14	35.34	8.27	0.75	1.5	0.0

Provides: RNDr. Peter Ľuptáčik, PhD.

Date of last modification: 20.02.2025

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ ZCHI2/11	**Course name:** Basic chiropterology

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: 3

Recommended semester/trimester of the course: 1.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:
Comprehensive review of scientific knowledge on bats. Review on methods of bat research in conditions of the temperate zone.

Brief outline of the course:
1. Bat systematics. 2. Species diversity, bats of the Palaearctic. 3. Morphology, anatomy. 4. Physiology. 5. Echolocation. 6. Ecology: roosts, diet, hibernations, migration. 7. Social structure, mating systems. 8. Population ecology. 9. Research methods. 10. Students' presentations. 11. Practical. 12. Field excrusion. 13. Field excrusion.

Recommended literature:
Kunz T. H. & Fenton M. B. (eds), 2003: Bat ecology. The University of Chicago Press, Chicago and London, 779 pp.

Course language:

Notes:

Course assessment
Total number of assessed students: 90

abs	n
98.89	1.11

Provides: doc. RNDr. Marcel Uhrin, PhD., univerzitný profesor

Date of last modification: 20.09.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚBEV/ MMZ/20	**Course name:** Basic molecular methods in Zoology and Animal Physiology

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: 3

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

Course level: II.

Prerequisities:

Conditions for course completion:
Ongoing evaluation: active participation on practical exercises
Final evaluation: fulfilling the practical task

Learning outcomes:
Practical skills in the following techniques:
- Pipetting methods,
- DNA/RNA extraction,
- PCR methods (PCR, RT-PCR, qRT-PCR) + electrophoretic visualization
- database NCBI (GenBank, BOLD)
- basic instructions in using of phylogenetic program Mega: sequences trimming, construction of phylogenetic trees

Brief outline of the course:
The aim of the subject is to introduce the methods of molecular biology as the tools used to solve problems of zoological, ecological and physiological studies, in both theoretical but first of all in practical form.
The course focuses on basic molecular methods used in studies of taxonomy, ecology and physiology of animals (invertebrates and vertebrates). The main task is to provide not only theoretical knowledge, but in the form of practical exercises, mainly skills usable in practice (especially in the solution of future bachelor and master theses).

Recommended literature:
Šmarda a kol. 2005. Metody molekulární biologie. Masarykova univerzita, Brno.
Weaver, R.F. 2002. Molecular biology. University of Kansas
Pastoráková A. & Petrovič, R. 2016. Molekulárne metódy aktuálne používané v klinickej genetike. Univerzita Komenského v Bratislave, Lekárska fakulta

Course language:
Slovak or English language

Notes:

Course assessment
Total number of assessed students: 25

A	B	C	D	E	FX
28.0	44.0	12.0	16.0	0.0	0.0

Provides: RNDr. Andrea Rendošová, PhD.

Date of last modification: 26.02.2025

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ ZNFYZ/15	**Course name:** Basics of Neurophysiology

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: II.

Prerequisities:

Conditions for course completion:
Regular attendance at classes.
Active participation in practices.
Elaboration of assigned tasks.
Successful completion of the oral exam.

Learning outcomes:
Students will learn the principles of nervous system functioning from the level of individual neurons (membrane potential, action potential, synaptic transmission), through simple neural circuits (reflexes, ...) to the description of complex functional parts of the nervous system (brain, spinal cord, peripheral nervous system) .

Brief outline of the course:
1. Neurophysiology as a part of neurosciences
2. Nervous system - basic structures and functions (CNS, PNS).
3. Neuron as a basic functional unit of the nervous system - structure, function, structural and functional classification
4. Glial cells - role and functional classification
5. Electrochemical basis of membrane potential; ion channels, ion currents
6. Origin and propagation of action potential, phases, parameters and types of action potential. Nerve fibers, myelin, rate of propagation of arousal, etc.…
7. Principle of synapse, chemical and electrical synapse, synaptic excitation and inhibition. Synaptic potentials, temporal and spatial summation, excitation threshold.
8. Neurotransmitters and receptors. Receptor classification, mechanism of action.
9. Spinal cord - basic structures and functions. Spinal reflexes. Basic sensory and motor pathways in the spinal cord.
10. Brain - basic parts, their origin and function.
11. Neurophysiology of the senses - sight, hearing, smell, taste and touch.
12. Peripheral nervous system. Autonomic nervous system - sympathetic and parasympathetic.
13. Bioelectrical manifestations of the nervous system. Clinical and experimental research methods.

Recommended literature:

Brain Facts, a primer on the brain and nervous system, published by the Society for Neuroscience, 2018
Mysliveček,J., Myslivečková-Hassmannová,J.: Nervová soustava. Funkce, struktura a poruchy činnosti. Avicenum, Praha, 1989.
Schmidt,R.,F.: Fundamentals of Neurophysiology. Springer Verlag, New York, Berlin, Heidelberg, 1985.
Greenstein,B., Greenstein,A.: Color Atlas of Neuroscience. Thieme. Stuttgart, New York, 2000.

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 37

A	B	C	D	E	FX
83.78	10.81	5.41	0.0	0.0	0.0

Provides: RNDr. Ján Gálik, CSc.

Date of last modification: 13.10.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/BEK/22	**Course name:** Behavioral ecology

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: distance, present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 2.

Course level: II., III.

Prerequisities: ÚBEV/ETO1/03

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 222

A	B	C	D	E	FX	N	P
86.94	3.6	4.95	0.45	0.0	0.0	0.0	4.05

Provides: RNDr. Igor Majláth, PhD.

Date of last modification: 22.09.2023

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ BFA1/03	**Course name:** Biopharmacology

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.

Course level: II.

Prerequisities:

Conditions for course completion:
Written test.

Learning outcomes:
To provide the students with basic knowledge on the classification and mechanism of action of the most important pharmaceuticals

Brief outline of the course:
Pharmaceutical principles. Classification of drugs. Absorption, biotransformation and excretion of drugs from the organism. Pharmacogenetics. Molecular mechanisms of drug effects. Drug-receptor interactions. Chronic administration of drugs. Teratogenity and cancerogenity of drugs. Development and introduction of drugs for clinical use. Principle of chronopharmacology

Recommended literature:
Clark, W. G., Braber, D.C., Johnen, A.R.: Goth‘s medical pharmacology. Mosby Year Book, 1992

Course language:

Notes:

Course assessment
Total number of assessed students: 243

A	B	C	D	E	FX
14.81	25.51	23.87	16.46	17.28	2.06

Provides: doc. RNDr. Monika Kassayová, CSc.

Date of last modification: 23.11.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ BSP/04	**Course name:** Biospeleology

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

Number of ECTS credits: 4

Recommended semester/trimester of the course: 2.

Course level: II., III.

Prerequisities:

Conditions for course completion:
Active participation in seminars and field trips, preparation of oral presentation to a selected topic, completion of semestral written examination, final oral examination.

Learning outcomes:
The main goal of the subject is to get basic knowledge on the diversity of the cave biota, relationships and adaptations to the specific environment, its role in the cave system and protection of the cave biota.

Brief outline of the course:
The subject covers morphology and systematics of the cave fauna and microflora, their adaptations to this specific habitat type, geographic distribution, functioning of the cave system and interactions between its components, human influence and protection of the cave biota.

Recommended literature:
Culver D. C., 1982: Cave life – evolution and ecology. Harvard University Press, Cambridge, Massachusetts and London
Culver D.C., White W.B., 2005: Encyclopedia of caves. Elsevier, 1-654
Vandel A., 1965: Biospeleology - the biology of cavernicolous animals. Pergamon Press, Oxford
Wilkens H., Culver D.C., Humphreys W.F., 2000: Subterranean Ecosystems. Ecosystems of the World, vol. 30. Elsevier, 1-791

Course language:

Notes:

Course assessment
Total number of assessed students: 91

A	B	C	D	E	FX	N	P
90.11	0.0	2.2	1.1	0.0	0.0	0.0	6.59

Provides: prof. RNDr. Ľubomír Kováč, CSc., RNDr. Andrea Rendošová, PhD.

Date of last modification: 10.12.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚBEV/ BSTII/25	**Course name:** Bioštatistika II

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: 2., 4.

Course level: II.

Prerequisities:

Conditions for course completion:
Oral exam, completion of exercises, elaboration of a semester assignment

Learning outcomes:
The course is focused on practical processing of biometric data. It should provide students with knowledge of basic tools for processing their own measurements in the processing of final theses.

Brief outline of the course:
Lectures:
1. Biometric data and their graphical presentation, univariate statistics data
2. Normalization and standardization of data
3. Exploratory data analysis
4. Basics of Univariate Statistics, Part 1
5. Basics of Univariate Statistics, 2nd time
6. Biometric data and graphical presentation, data of multivariate statistics
7. Binary, quantitative and semi-quantitative data in biometrics
8. Multivariate clustering analyses
9. Ordinal analyses of multivariate data, methods of hypothesis formation
10. Ordinal analyses of multivariate data, methods testing hypotheses
11. Introduction to biometric data processing in the context of spatial diversity
12. Selected topics of biometric processing of digital image data
13. Introduction to Chemometric Data Processing
14. Biometrics and biodiversity

Exercises:
Implementation of the lectured topics on sample datasets. Past, R environment.
Data Normalization and Standardization, Logarithmic and Box-Cox Transform, Histogram, Biplot, 3D Plot, Radar Fence, Bar-Box-Pie-Jitter-Violin Graph, Summary Statistics, Normality and Homoscedasticity Tests, t Test, F Test, Mann-Whitney Test, Kolmogorov-Smirnov Test, One-Factor and Two-Factor ANOVA, Correlation Table, Heatmap, ANCOVA, pivot table, clustering analyses, K-means clustering, principal component analysis, canonical correspondence analysis, non-metric multidimensional scaling, linear discriminant analysis, redundancy analysis, MANOVA, one-factor

and two-factor PERMANOVA, linear regression, Mantel's test, autocorrelation analysis, Thin-plate splines, elliptic fourier analysis, allometric analysis, alpha and beta diversity indicators

Recommended literature:

Zar, J.H. 1996. Biostatistical analysis. 3rd ed. Prentice Hall.
Legendre, P. & L. Legendre. 1998. Numerical Ecology, 2nd English ed. Elsevier.
Borcard, D., Gillet, F. & P. Legendre. 2018. Numerical Ecology with R.

Course language:
Slovak, English

Notes:

Course assessment
Total number of assessed students: 0

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

Provides: Mgr. Vladislav Kolarčik, PhD., univerzitný docent, RNDr. Ivana Ihnatová, PhD.

Date of last modification: 06.03.2025

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ MEB1/03	**Course name:** Cell metabolism

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:
Oral examination.

Learning outcomes:
To provide the students with knowledge about the principal metabolic processes in living cells.

Brief outline of the course:
Carbohydrates – significance and role in animal organisms. Inborn errors of carbohydrate and lipid metabolism in humans. Lipid metabolism. Role of the liver and adipose tissue in lipid metabolism. Plasma lipoproteins – metabolism and disorders. Cholesterol and atherosclerosis. Protein metabolism and its inborn errors. Water and solute metabolism. Physiology and regulatory mechanisms of water-base balance in animal organisms. Metabolic regulation. Topochemistry of metabolic processes

Recommended literature:
1. Murray, R. K., Grammer, D. K., Mayes, P. A., Rodwell, V.W.: Harper‘s Biochemistry. Prentice-Hall, Appleton & Lange, 1993
2. Vasudevan D.M. and co.: Textbook of Biochemistry for Medical Students. Jaypee Brothers Medical Publishers 2011

Course language:

Notes:

Course assessment
Total number of assessed students: 246

A	B	C	D	E	FX
30.08	23.98	19.51	14.23	8.13	4.07

Provides: doc. RNDr. Monika Kassayová, CSc.

Date of last modification: 23.09.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ CRO1/03	**Course name:** Chronophysiology

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: distance, present

Number of ECTS credits: 5

Recommended semester/trimester of the course: 1.

Course level: II., III.

Prerequisities:

Conditions for course completion:
Active participation on practicals.
Passing of the final oral examination.

Learning outcomes:
To outline the problematics of the time organization of biological processes and their significance in evolution of living organisms.
To understand the mechanisms, ensuring the adaptation to regular changes in their environment with various periodicity, as well as of the common action of external and internal factors in control of the biological rhythms..

Brief outline of the course:
1. Time structure of the physiological variables in animals.
2. Overview of the history of chronobiology.
3. Basic notions and division of biological rhythms.
4. Genetic basis and molecular mechanisms of the biological rhythms in animals.
5. Endogenous character of the biological rhythms. Localization of the biological clock.
6. Synchronsation of rhythms. Multioscillatory system of the body.
7. Model animals in study of biological rhythms.
8. Ultradian rhythms.
9. Circaannual (seasonal) rhythms.
10. Application of chronobiological principles in medicine.
11. Disturbations of the biological rhythms. The jet-lag syndrome.
12. Biological rhythms in shift-work.
13. The significance of biological rhythms in the evolution of living organisms.

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 118

A	B	C	D	E	FX	N	P
22.88	21.19	26.27	9.32	3.39	0.0	0.0	16.95

Provides: RNDr. Natália Pipová, PhD.

Date of last modification: 21.09.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚBEV/ PFYZ/15	**Course name:** Comparative animal physiology
Course type, scope and the method: **Course type:** Lecture **Recommended course-load (hours):** **Per week:** 2 **Per study period:** 28 **Course method:** distance, present	
Number of ECTS credits: 3	
Recommended semester/trimester of the course: 1., 3.	
Course level: II., III.	
Prerequisities:	
Conditions for course completion: Working out the given themes of the report. Passing the final oral examination.	
Learning outcomes: The students receive an overview on the significance of physiological adaptational mechanisms to the various life conditions on the individual levels of the phylogenesis.	
Brief outline of the course: 1. Phylogeny of food acquisition, processing and utilization in animals. 2. Energy metabolism (factors influencing the metabolic rate; physiology of physical work; principles of aerobic performance in various species). 3. Thermal housekeeping (poikilothermic and homoiothermic strategies. 4. Life in cool environment). 5. The phylogenic development of the nervous system. 6. Sensory abilities of the animals. 7. Evolution of the brain. Endocrinal and neuroendocrinal regulation of body functions in evertebrates and vertebrates. 8. Reproductive systems of the animals. 9. Navigation in animals. Motoric basics of animal behaviour. 10. The mechanisms of the exchange of respiratory gases in a phylogenetic view. 11. Comparison of circulatory systems in animals. 12. Water- and mineral housekeeping in terrestrial and aquatic animals. 13. Excretory systems of the animals.	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 28

A	B	C	D	E	FX	N	P
32.14	17.86	0.0	7.14	3.57	0.0	0.0	39.29

Provides: doc. RNDr. Bianka Bojková, PhD.

Date of last modification: 21.09.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ CK1/03	**Course name:** Cytogenetics and Karyology

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., III.

Prerequisities:

Conditions for course completion:
written tests, oral examination;
Practicals: The protocols and worksheets from the practical activities or distance learning are required. The e-learning course UBEV/Cytogenetika a karylógia is available in Moodle.

Learning outcomes:
To gain knowledge and experience on genetic processes at the cell level using the newest scientific findings of cytogenetics. To get acquainted in detail with the results and significance of human genome mapping (HUGO project).

Brief outline of the course:
Organisation of eukaryotic genome. Nuclear skeleton. Nucleolus, nucleolar skeleton. Chromatin structure and changes of chromatin. Levels of DNA organisation in cell nucleus. Chromosomes. Cell cycle. Genetic regulation of a cell cycle. Molecular cytology. Basic characteristics of the Human genom project - what we can learn from it?

Recommended literature:
Alberts, B., Heald, R., Hopkin, K., Johnson, A., Morgan, D., Roberts, K., & Walter, P. (2022). Essential Cell Biology (6. vydanie). W. W. Norton & Company. ISBN: 978-1-324-03343-1
Liehr, T. (2021). Cytogenomics. Elsevier, Academic Press. ISBN: 978-0-12-823579-9
Snustad, P.D., Simmons, M.J.: Principles of Genetics. John Wiley and Sons, 5th edition 2009, 871 pp.
Periodicals
Internet sources

Course language:

Notes:

Course assessment
Total number of assessed students: 1725

A	B	C	D	E	FX	N	P
24.87	14.67	15.71	14.61	18.09	11.25	0.0	0.81

Provides: doc. RNDr. Katarína Bruňáková, PhD., RNDr. Miroslava Bálintová, PhD., RNDr. Jana Henzelyová, PhD.
Date of last modification: 04.02.2025
Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚBEV/ SDPa/15	**Course name:** Diploma Thesis Seminar
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 1.	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 284

abs	n
100.0	0.0

Provides:
Date of last modification: 03.05.2015
Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚBEV/ SDPb/15	**Course name:** Diploma Thesis Seminar
Course type, scope and the method: **Course type:** **Recommended course-load (hours):** **Per week: Per study period:** **Course method:** present	
Number of ECTS credits: 4	
Recommended semester/trimester of the course: 2.	
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: 229	
abs	n
100.0	0.0
Provides:	
Date of last modification: 03.05.2015	
Approved: prof. RNDr. Ľubomír Kováč, CSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚBEV/ SDPc/15	**Course name:** Diploma Thesis Seminar
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: 3.	
Course level: II.	
Prerequisities:	
Conditions for course completion:	
Learning outcomes:	
Brief outline of the course:	
Recommended literature:	
Course language:	
Notes:	
Course assessment Total number of assessed students: 244	

abs	n
100.0	0.0

Provides:
Date of last modification: 03.05.2015
Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ SDPd/15	**Course name:** Diploma Thesis Seminar

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: 4.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 234

A	B	C	D	E	FX
84.62	10.26	3.42	0.85	0.85	0.0

Provides:

Date of last modification: 03.05.2015

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 16

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
The diploma thesis is the result of the student's own creative work. It must not show elements of academic fraud and have to meet the criteria of proper research practice defined in Rector's Decision no. 21/2021, which establishes the rules for assessing plagiarism at the Pavol Jozef Šafárik Univesity in Košice and its components. The fulfillment of the criteria is verified mainly in the training process and in the process of defending the thesis. Failure to comply with them is grounds for initiation of disciplinary proceedings.

Learning outcomes:
With the diploma thesis, the student demonstrates mastery of the extended theory and professional terminology of the field of study, the acquisition of knowledge, skills and competences in accordance with the declared profile of the graduate of the study program, as well as the ability to apply them in an original way when solving the selected problem of the field of study. The student will demonstrate the ability of independent professional work from a content, formal and ethical point of view. Further details of the diploma thesis are determined by Directive no. 1 /2011 on the basic requirements of the final theses and the Study Regulations of the UPJŠ in Košice for 1st, 2nd and combined 1st and 2nd degrees.

Brief outline of the course:
The student carries out his activities under the guidance of the supervisor. The result of the student's work should be the fulfillment of the objectives stated in the approved thesis assignment.

Recommended literature:
Mentioned in the approved thesis assignment.

Course language:

Notes:

Course assessment
Total number of assessed students: 48

A	B	C	D	E	FX
54.17	25.0	12.5	6.25	2.08	0.0

Provides:
Date of last modification: 31.07.2022
Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/EKO/20	**Course name:** Ecology of Amphibians

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
Ongoing evaluation: active participation on practical exercises.
Final evaluation: fulfilling the practical task.

Learning outcomes:

Brief outline of the course:
Presenting the basic knowledge of the most threatened class of vertebrates - amphibians, and various methods used in their research. This subject will contain theoretical and practical part, which will take place directly in the field with the main aim to show students how to observe and catch amphibians, handling, obtaining of biological material and its storage. In addition, students will be involved in activities related to the protection of amphibians in selected locations in eastern Slovakia (building of protection barriers, transferring of amphibians during their spring migration).

Recommended literature:
Dodd Jr C.K., 2010. Amphibian ecology and conservation: a handbook of techniques. New York: Oxford University Press.
Hillman S. S., Wothers P. C., Drewes R. C. & Hillyard S. D., 2009: Ecological and environmental physiology of amphibians. New York: Oxford University Press.

Course language:
Slovak or English language.

Notes:

Course assessment
Total number of assessed students: 28

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

Provides: RNDr. Monika Balogová, PhD., RNDr. Natália Pipová, PhD.

Date of last modification: 26.02.2025

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ EPZ1/03	**Course name:** Ecology of Soil Animals

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:
active (100%) participation in seminars and lectures
preparation of the presentation to the given topic
preparation of calculation protocol
practical and oral examination

Learning outcomes:
The main goal of the subject is to gain basic knowledge on the functioning of the soil system with the special reference to dominant systematic groups of the soil fauna, their ecology and taxonomic identification.

Brief outline of the course:
The subject deals with the soil as an ecological system and type of environment It is concentrated to the ecological factors ruling the life in soil, soil-dwelling animals and their adaptations to this specific habitat. Functioning of the soil system and understanding of the principal interactions of soil fauna with plant rhizosphere and soil microflora are among the main goals of the discipline.
1. Soil physical and soil-chemical characteristics.
2. Ecological characteristics of dominant groups of soil fauna - Protozoa, Nematoda.
3. Ecological characteristics of dominant groups of soil fauna - Annelida, Tardigrada
4. Ecological characteristics of dominant groups of soil fauna - Aranea, Pseudoscorpiones, Opiliones
5. Ecological characteristics of dominant groups of soil fauna - Acari, Isopoda
6. Ecological characteristics of dominant groups of soil fauna - Myriapoda - Pauropoda, Symphyla, Diplopoda, Chilopoda
7. Ecological characteristics of dominant groups of soil fauna - Apterygota - Diplura, Protura, Collembola, Thysanura
8. Ecological characteristics of dominant groups of soil fauna - Coleoptera - Carabidae, Staphylinidae, Elateridae, Diptera
9. Ecological characteristics of dominant groups of soil fauna - Vertebrata-Insektivora
10. Methodological approaches, soil sampling.
11. Identification of soil fauna-keys as taxonomic tool.
12. Identification of soil fauna - morphological differences in males, females, adults, juveniles.

13. Open, forest ecosystems and agricultural soils and their fauna.

Recommended literature:

Coleman, D.C., Crossley, D. A., 1996: Fundamentals of Soil Ecology. Academic Press, London, 1-205
Eisenbeis, G., Wichard, W., 1987: Atlas on the Biology of Soil Arthropods. Springer- Verlag Berlin, Germany, 1-437
Schaller, F. 1968: Soil Animals. The University of Michigan Press, United States of America, 1-144
Wallwork, J. A., 1970: Ecology of Soil Animals. McGraw- Hill, England, 1-283
Wallwork, J. A., 1976: The distribution and Diversity of Soil Fauna. Academis Press, London, 1-355

Course language:

Notes:

Course assessment

Total number of assessed students: 164

A	B	C	D	E	FX
54.27	21.34	16.46	5.49	2.44	0.0

Provides: RNDr. Natália Raschmanová, PhD., univerzitná docentka

Date of last modification: 12.10.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ EVZ1/03	**Course name:** Ecology of Water Animals

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:

Learning outcomes:
Ecological characteristic of freshwater groups and prevalent species (invertebrates, vertebrates), characteristic for habitat type and water condition (bioindication).

Brief outline of the course:
Biology of the most common representatives and groups of freshwater animals of Central Europe temperate region. Mohological adaptations, taxanomical characters, water communities.

Recommended literature:
Bronsmark, Ch., Hannsson, L. A.: The biology of Lakes and ponds. Biol. Of Habitats Ser, 1998
Fryer, G., Murphy, S. A natural history of the lakes, tarns and streams of the English Lake District. Freshw. Biol. Association Cumbria, 1991

Course language:

Notes:

Course assessment
Total number of assessed students: 194

A	B	C	D	E	FX
35.57	14.43	15.98	32.47	1.55	0.0

Provides: doc. RNDr. Andrej Mock, PhD.

Date of last modification: 19.10.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ EKC1/00	**Course name:** Ecology of mammals

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

Number of ECTS credits: 3

Recommended semester/trimester of the course: 4.

Course level: II., III.

Prerequisities:

Conditions for course completion:

Learning outcomes:
To understand a) ekological position of mammal groups in ecosystems and their importance in ecological networks; b) anthropogenic impacts on mammals and their coenoses; c) population ecology of some mammal groups

Brief outline of the course:
1. Factors of environment. Temperature. Water. Snow. Light. Adaptations. Hypothermy. Hibernation, aestivation, letargy. 2. Reseources. Food. Food strategies and specialistaions. 3. Habitat and nika. Interactions. 4. Komensalism. Mutualism. Kooperation. Competion. Predator and prey. 5. Mammals and plants. Food webs. 6. Teritoriality. Home range. Lek. Metapopulations. 7. Reproduction. Mating systems. Oestrus. r- and K- strategy. Monogamy, polygamy. 8. Dispersion. Migration. Habitat selection. Individual. Population. Natality, mortality. Kohorts. Population dynamics and cycles. Gradations. 9. Mammal diversity. Island biogeografy. Macroecology. Gradients. Long-term studies. 10. Habitat fragmentations. Synanthropy. 11. Conservation of mammals. Wind energy. Mammal introductions. Repatriations, reintroductions. Expansions. 12. Global climate changes and mammals. Protected areas. 13. Vulneralble species. Minimal viable population.

Recommended literature:
Feldhamer G., Drickamer L., Vessey SH., Merritt JF., 2000. Mammalogy: Adaptation, Diversity and Ecology. McGraw Hill Hardback, 563 pp.
Vlasák P., 1986. Ekologie cicavcu. Academia, Praha, 292 pp.

Course language:

Notes:

Course assessment
Total number of assessed students: 268

A	B	C	D	E	FX	N	P
64.55	16.42	11.19	2.24	2.24	0.0	0.0	3.36

Provides: doc. RNDr. Marcel Uhrin, PhD., univerzitný profesor
Date of last modification: 20.09.2021
Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ETO1/03	**Course name:** Ethology

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:
Fulfilled conditions for the exercises
Successfully completed oral exam

Learning outcomes:
To teach the students to know and to be aware of the importance of the behavioural aspect in biological sciences

Brief outline of the course:
History and development of ethology. Ethological methods. The innate forms of behaviour. The simplest forms of learning – conditioning and instrumental learning. Higher form of learning. Social behaviour. Sexual behaviour. Play behaviour. Biological rhythms. Orientation in space and animal migrations. Communication systems of animals. Emotions. Aggression in animal and human behaviour. Abnormal forms of behaviour

Recommended literature:
Franck, D.: Verhaltensbiologie. Einfuhrung in die Ethologie. Georg Thieme-Verlag, 1993
Manning, A., Dawkins, M. S.: An introduction to animal behaviour. Cambridge University Press, 1992
DRICKMER, L.C., VESSEY, S.H., MEIKLE, D. Animal Behavior: mechanisms, ecology, evolution. 4th ed. Dubuque : Wm. C. Brown Publishers, 1996.
Internet

Course language:

Notes:

Course assessment
Total number of assessed students: 1131

A	B	C	D	E	FX
43.32	24.31	22.81	7.87	1.59	0.09

Provides: RNDr. Igor Majláth, PhD., RNDr. Natália Pipová, PhD.

Date of last modification: 22.09.2023

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ EB1/99	**Course name:** Evolutionary Biology

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:
In the written exam, the student must demonstrate, in addition to knowledge in the field of evolutionary biology, knowledge of analytical and synthetic thinking when solving the answers to problem-formulated questions, while using knowledge from the entire bachelor's and master's studies of his field.

Learning outcomes:
Graduates of the course will gain an overview of evolutionary theories in the past and today, and based on the most modern scientific knowledge about macro- and microevolutionary processes in living nature at various levels of investigation and knowledge, they should be able to analytically solve scientific, but also philosophical questions in the field of evolutionary theory. He is able to argue and critically evaluate different views on evolution and apply his knowledge in different types of work tasks not only in an academic environment, but also in practice, e.g. in agriculture, ecology, environmental protection and the like.

Brief outline of the course:
1. Introduction to evolutionary biology. Historical development of ideas about the evolution of life. Evidence of the theory of evolution.
2. The origin and evolution of the first forms of life on Earth.
3. Theory of natural selection.
4. Molecular evolution I: Evolutionary processes at the gene level. Molecular evolution.
5. Molecular evolution II: Evolutionary processes at the level of species and populations.
6. Molecular evolution III: Evolution of genetic systems.
7. Reproductive strategies of plants, sexuality, asexuality and evolution.
8. Macroevolution and microevolution. Types of speciation. Evolutionary trends of green plants.
9. Extinction - a sad but natural part of evolution.
10. Overview of animal evolution.
11. Origin and development of man I.
12. Origin and development of man II.

Recommended literature:
Mayr, E.: Co je evoluce. Aktuální pohled na evoluční biologii. Academia Praha, 2009.
Flegr, J.: Evoluční biologie. Academia Praha 2005

Kejnovský, E., Hobza, R.: Evoluční genomika. (http://www.evolucnigenomika.cz/Skripta/Evolucni%20genomika%20skripta%202008.pdf) 2009
Futuyma, D.J.: Evolution. Sinauer Associates, Sunderland, 2005.
Briggs D., Walters S. M.: Proměnlivost a evoluce rostlin. Univerzita Palackého, Olomouc, 2001.
Dobzhansky T. et al.: Evolution. San Francisco 1977.
E.J.Larson : Evolúcia. Neobyčajná história jednej vedeckej teórie. Slovart, 2006.

Course language:

Notes:

Course assessment
Total number of assessed students: 675

A	B	C	D	E	FX
12.0	22.22	25.33	24.0	14.96	1.48

Provides: prof. RNDr. Pavol Mártonfi, PhD., prof. RNDr. Ľubomír Kováč, CSc., RNDr. Linda Petijová, PhD., Priv.-Doz. Souvik Kusari, Dr. rer. nat., univerzitný profesor

Date of last modification: 24.07.2022

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚBEV/ PRY/25	**Course name:** Fish parasites
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:** distance, present	
Number of ECTS credits: 5	
Recommended semester/trimester of the course: 2., 4.	
Course level: II., III.	
Prerequisities:	
Conditions for course completion: active participation in practical exercises, presentation of seminar work, continuous written examinations, oral examination	
Learning outcomes: After completing the course Fish parasites students will demonstrate: - knowledge of diagnostic methods commonly used in fish parasitology - practical use of methods commonly used in fish parasitology - evaluate the method of detection and identification on the basis of knowledge of fish parasite life cycles	
Brief outline of the course: The course focuses on the taxonomy, morphology, physiology, and behavioral manifestations, life cycles, and ecological requirements of selected groups of parasitic organisms of freshwater fish. It explores adaptations to a parasitic lifestyle in both unicellular and multicellular parasites, parasite-host interactions, and the mutual influence on the population dynamics of both parasites and hosts, host specificity, co-evolution with the host, the socio-economic impact of parasitic diseases, and the influence of humans and aquaculture.	
Recommended literature: 1. Woo, P.T.K. and Buchmann, K.. Fish Parasites: Pathobiology and Protection. (2012). India: CABI. 2. Williams, H. (1994). Parasitic Worms Of Fish. United Kingdom: Taylor & Francis. 3. Walster CH., Tepper J., Urdes L. Fundamentals of Aquatic Veterinary Medicine. (2022). United Kingdom: Wiley. 4. Smith S. A. Fish Diseases and Medicine. (2019). USA: CRC Press.	
Course language:	
Notes:	

Course assessment
Total number of assessed students: 0

A	B	C	D	E	FX	N	P
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Provides: RNDr. Mikuláš Oros, DrSc., RNDr. Viktória Majláthová, PhD., univerzitná docentka

Date of last modification: 27.02.2025

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ HDR1/99	**Course name:** Hydrobiology

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

Number of ECTS credits: 3

Recommended semester/trimester of the course: 1.

Course level: I., II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:
The transfer of knowledge of hydrobiology takes place in the form of lectures, seminars, field trips and independent work of students in the field according to the instructions of the teacher.
Teaching is focused on understanding the basic dynamics of abiotic and biotic relationships, conditions and interactions in different types of freshwater environments. It notes current issues such as biodiversity loss, degradation of aquatic habitats and drinking water sources, water loss in the country of pollution, historical degradation of watercourses by regulations, migration barriers and pollution, wetland extinction, acquaints students with the starting points of renaturalization and ecosystem revitalization. Water is the key to understanding the functioning of the landscape, living organisms are an indispensable part of the self-cleaning, productive and other properties of water, on which life depends on our planet. The climate crisis is opening up these problems with new urgency.

Recommended literature:
Dobson, M., Frid, C. Ecology of Aquatic Systems. Oxford University Press, 2009
Wetzel, R.G..: Limnology. Academic Press. 3rd Edition, 2001
Wetzel, R.G.: Limnological analyses. Springer Verl., 3rd Edition, 2000

Course language:

Notes:

Course assessment
Total number of assessed students: 236

A	B	C	D	E	FX
44.49	20.34	16.53	17.37	1.27	0.0

Provides: doc. RNDr. Andrej Mock, PhD., Mgr. Dalibor Uhrovič, PhD.

Date of last modification: 18.10.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ IMU1/03	**Course name:** Immunology

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: II.

Prerequisities:

Conditions for course completion:
Recognition.
Oral examination.

Learning outcomes:
This course introduces the students to the basic concepts of immunology as well as highlights the role and importance of immunology in various human diseases. The aim of Immunology lessons is the presentation of the organization and function of the immune system, as well as the comprehension of complex molecular and cellular interactions during the induction of immune responses.

Brief outline of the course:
Basic immunology: Lymphatic System Anatomy, The Innate Immune System, The Induced Responses of Innate Immunity, The Adaptive Immune Response, Antigens and Antibodies, Antigen Recognition by B-cell and T-cell Receptors, Antigen Presentation to T-lymphocytes, Complement, Clinical immunology: Allergy and other Hypersensitivities, Autoimmunity and Transplantation, Tumor Immunology, Disorders of The Immune System.

Recommended literature:
Janeway Ch. A., Travers P., Walport M., Schlomchik M.: Immunobiology. Garland Science, 2004
Murphy, K. (2012): Jeneway's Immunobiology. 8th ed. Garland Science
Delves, P.J. et al. (2011): Roitt's essential immunology 12th ed Wiley-Blackwell

Course language:

Notes:

Course assessment
Total number of assessed students: 1087

A	B	C	D	E	FX
40.02	23.83	23.64	6.99	1.93	3.59

Provides: RNDr. Vlasta Demečková, PhD., univerzitná docentka

Date of last modification: 22.09.2023

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ UFCM/10	**Course name:** Introduction to Flow Cytometry

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: 1.

Course level: II., III.

Prerequisities:

Conditions for course completion:

Learning outcomes:
The goal is to teach the students on II. stage some theoretical and practical aspects of flow cytometry. The course will cover theoretical bases of fluorescence, its detection, multiparametric analyses and practical applications in clinical diagnosis and scientific research.

Brief outline of the course:
1.) Conditions for completing the course, completing training in health and safety regulations. 2.) Fluorescence, types of fluorescent devices, flow cytometer. 3.) Principle of flow cytometry, data presentation, gating strategy. 4.) Particles size in flow cytometry, flow cytometry in cell biology, zoology and microbiology. 5.) Cell sorting. 6.) Cell cycle analysis. 7.) Detection of phosphatidylserine translocation and viability. 8.) Compensation, spectraviewer. 9.) Analysis of mitochondrial membrane potential and activation of caspases. 10.) Detection of stem cells. 11.) Immunophenotyping. 12.) Flow cytometry in botany. 13.) DNA content and genome size. Data evaluation strategies, FlowJo software.

Recommended literature:
1. H.M. Shapiro: Practical Flow Cytometry, WILEY-LISS, 2003. (ISBN:0-471-41125-6)
2. A.L. Givan: Flow Cytomtery: First principles, WILEY-LISS, 2001, (ISBN 0-471-22394-8)
3. J. Dolezel a kol.: Flow Cytometry with Plant Cells, Willey-VCH, 2007, (ISBN: 978-3-527-31487-4)

Course language:

Notes:

Course assessment
Total number of assessed students: 206

A	B	C	D	E	FX	N	P
64.08	8.74	5.83	1.94	1.46	0.0	0.0	17.96

Provides: doc. RNDr. Rastislav Jendželovský, PhD., RNDr. Viktória Dečmanová, PhD., Mgr. Vladislav Kolarčik, PhD., univerzitný docent

Date of last modification: 19.02.2024
Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

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

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

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

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

Course language:
Slovak

Notes:

Course assessment
Total number of assessed students: 6

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

Provides: prof. PhDr. Eugen Andreanský, PhD.

Date of last modification: 01.02.2022

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/MECV/16	**Course name:** Metódy ekologického výskumu cicavcov

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: 3

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: 13

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

Provides: doc. RNDr. Marcel Uhrin, PhD., univerzitný profesor

Date of last modification: 20.09.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ MZO1/03	**Course name:** Molecular Basis of Ontogenetic Development

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:

Course level: II.

Prerequisities:

Conditions for course completion:
written examination (pass three tests)

Learning outcomes:
Acquiring of basic knowledge about molecular and regulatory mechanisms of ontogenetic development of multicellular organisms (animal and plant organisms).

Brief outline of the course:
Molecular and regulatory basis of ontogenesis:
1) Totipotency of zygote and genomic equivalence as general pre-requisite for ontogenetic development. Cell adhesion and migration, positional information, developmental signals and morfogens. 2) Induction, determination and differentiation. Selective gene expression, combinatory control of gene expression, lateral inhibition. 3) Mechanisms of epigenetic memory. DNA methylation, genomic imprinting, X-chromosome inactivation. Morphogenesis (asymmetry and polarity of cells, reorganization of cytoskeleton, embryonic folding and flexion). 4) Genes controllig development (selector genes, regulators and super-regulators, homeotic genes). Programmed cell death (apoptosis autophagy). 5) 1st test.
Ontogenetic development of drosophila:
6) Oogenesis. Specification and polarization of oocyte, determination of oocyte axes. Fertilization, cleavage and early embryogenesis. 7) Early embryo polarization and determination of embryo axes. Specification of body segments, segmentation genes. 8) Gastrulation (germ layers formation, neurulation). Morphogenesis and cell rearrangements. Development of some organs and organ systems. Pupation and metamorphosis. 9) 2nd test.
Ontogenetic development of mammals:
10) Fertilization. Cleavage and early embryogenesis (blastulation, gastrulation, neurulation). 11) Early embryo polarization and determination of embryo axes. Induction of primitive streak and germ layers formation. Specification and development of CNS. Somitogenesis, myogenesis. 12) Development of some organs and organ systems. 13) 3rd test.

Recommended literature:
S.F. Gilbert, M.J.F. Barresi: Developmental Biology, 11th edition, Sinauer Associates, Inc., 2016

Course language:

Notes:

Course assessment
Total number of assessed students: 441

A	B	C	D	E	FX	N	P
37.64	21.32	12.02	14.51	7.94	4.99	0.0	1.59

Provides: RNDr. Zuzana Jendželovská, PhD.

Date of last modification: 09.09.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ NATM/15	**Course name:** Neuroanatomy

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.

Course level: I., II.

Prerequisities:

Conditions for course completion:
1. compulsory participation on Anatomy lectures and exercises, max. 3 absences per semester. If the number of absences exceeds three, every other absence results in the loss of one point from the earned points.
2. one written exam (max. 50 points) during semester
3. written exam (test, 50 points max.) during summer exam period. Final grade will be calculated based on the total sum of earned points from written exam (50 points) and test (50 points). Grading scale: A (100-91 points), B (90.5-81), C (80.5-71), D (70.5-61), E (60.5-51), FX (50.5 and less)

Learning outcomes:
After successful completion of the lectures, student masters the knowledge on anatomy and organization of central and peripheral nervous system. Student understands the particular functions of nervous system in homeostasis, sensory perception, motor functions, as well as in processing of signal at various levels of nervous system. Successful completion of the lectures prepare students for further study of various psychological disciplines.

Brief outline of the course:
1. introduction to neuroanatomy, basic principles of functional neuroanatomy, classification of the nervous system,dividing of the Nervous System (CNS, PNS, autonomous NS, somatic NS),
2. the spinal cord and nervous tracts
3. the brainstem: medulla oblongata, pons, mesencephalon
4. peripheral nervous system: spinal and cranial nerves
5. the cerebellum
6. the diencephalon
7. the telencephalon, cerebral cortex (paleopallium, archipallium, neopallium) and basal ganglia
8. ventricular system of the brain, meninges and blood supply,
9. autonomic nervous system: symphatetic and parasymphathetic
10. functional systems I: motor systems
11. functional systems II: sensory systems, perception
12. functional systems III: limbic system, emotions, memory
13. functional systems IV: higher cognitive functions, motivation

Recommended literature:

Lovásová, K., Kluchová, D., Boleková, A.:Neuroanatómia pre psychológov, Košice, Equilibria, UPJŠ 2015
Miklošová M.: Anatómia, Košice, Equilibria, UPJŠ 2011
Druga R., Grim M., Dubový P.: Anatomie centrálního nervového systému Galén Karolinum, 2011
Ševc, J., Mochnacký, F.: Anatomické termíny pre jednoodborové a medziodborové štúdium biológie, UPJŠ, e-book (https://unibook.upjs.sk/sk), 2020

Course language:

Notes:

Course assessment
Total number of assessed students: 380

A	B	C	D	E	FX
13.42	9.74	16.05	17.37	25.79	17.63

Provides: doc. RNDr. Juraj Ševc, PhD., RNDr. Anna Alexovič Matiašová, PhD.

Date of last modification: 07.09.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ORE/25	**Course name:** Ornitologická exkurzia

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: II.

Prerequisities:

Conditions for course completion:
Attendance of practicals

Learning outcomes:
Acquire the basic information and skills you need for birdwatching. Learn to distinguish bird species of different ecological groups under field conditions using visual and acoustic methods. Demonstrate capturing and marking birds for research purposes. Participants will learn information on current scientific and conservation developments in the field.

Brief outline of the course:
1. Field trips for birds in the morning and evening
2. Observation of breeding behaviour, feeding ecology and migration
3. Mist-netting and banding of birds by ornithological rings
4. Processing of acoustic recordings and computer data analysis
5. Modern technologies and field methods for studying bird behaviour
6. Practical nature conservation
7. Citizen science
8. Ad hoc lectures on bird topics
9. Visit to a site where up to 100 bird species can be observed during the excursion

Recommended literature:
Svensson L, Mullarney K, Zetterström D, Grant PJ (2009) The most complete guide to the birds of Britain and Europe. HarperCollins Publishers, London. (The Collins Bird Guide App)
Trnka A, Grim T (2014) Ornitologická príručka. SOS/BirdLife Slovensko, Bratislava.
Šťastný K, Krištín A (2021) Vtáky Česka a Slovenska. Ottovo nakladateľstvo, Praha.
Danko Š, Darolová A, Krištín A (2002) Rozšírenie vtákov na Slovensku. VEDA vydavateľstvo SAV, Bratislava.
Cepák J et al. (2009) Atlas migrace ptáků České a Slovenské republiky. Aventinum, Praha.

Course language:
Slovak, English

Notes:

Course assessment Total number of assessed students: 0	
abs	n
0.0	0.0
Provides: Mgr. Peter Kaňuch, PhD.	
Date of last modification: 28.02.2025	
Approved: prof. RNDr. Ľubomír Kováč, CSc.	

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ PAR2/03	**Course name:** Parasitology II

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

Number of ECTS credits: 3

Recommended semester/trimester of the course: 2.

Course level: II., III.

Prerequisities:

Conditions for course completion:
active participation in practical exercises
presentation of seminar work
continuous written examinations
oral examination

Learning outcomes:
After completing the course Parasitology II. students will demonstrate
- knowledge of diagnostic methods commonly used in parasitology
- practical use of methods commonly used in parasitology
- evaluate the method of detection and identification on the basis of knowledge of parasite life cycles

Brief outline of the course:
The course builds on the knowledge acquired in the Parasitology I. course, expands them and includes vectors transmitted organisms. It focuses on mastering the methods used in parasitology.
Syllabus:
Week 1: Parasitic adaptations
Week 2: Parasite-host interactions
Week 3: Behavioral strategies of parasites
Week 4: Effect of the parasite on host behavior
Week 5: Vector-borne viruses
Week 6: Vector-borne bacteria
Week 7: Vector-borne parasites
Week 8: Laboratory diagnostic methods
Week 9: Flotation and serological methods
Week 10: Molecular detection and identification
Week 11: Methods of capturing vertebrates for parasitological purposes
Week 12: Methods of capturing invertebrates for parasitological purposes
Week 13: Parasitological autopsy

Recommended literature:
1. Roberts, Janovy Jr. Nadler,Foundations of Parasitology, 9th edition, 2012 McGraw-Hill Education, 701pp.

2. Loker, Parasitology: A Conceptual Approach, 2015, Garland Science, 560 pp.

Course language:
slovak, english

Notes:

Course assessment
Total number of assessed students: 79

A	B	C	D	E	FX	N	P
75.95	7.59	5.06	1.27	1.27	1.27	0.0	7.59

Provides: RNDr. Viktória Majláthová, PhD., univerzitná docentka, RNDr. Mikuláš Oros, DrSc.

Date of last modification: 17.09.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

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

Course assessment
Total number of assessed students: 0

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

Provides: doc. PhDr. Kristína Bosáková, PhD.
Date of last modification: 01.02.2022
Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ MR1/03	**Course name:** Plant Metabolism

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:

Course level: II.

Prerequisities:

Conditions for course completion:
1. Active participation in laboratory practicals. Reasoned absence can be justified by the teacher for a maximum of 4 hours (one two-hour course) without the need for replacement. In the case of a longer justified absence, the teacher will determine an alternative form of mastering the missed teaching.
2. Before the practicals, students have to study the main theses of the task that will be realized. Students will receive an exact schedule of tasks according to individual lessons at the beginning of the semester.
3. Students make a written record of the practicals. Students will evaluate the resultsfrom and draw a conclusion. The form in which this activity will be checked is determined by the teacher at the beginning of the semester. After this check the task is considered validly completed.
4. Whole pacticals are considered to be finally completed upon valid completion of all tasks. The exception is the justified non-participation (point 1). Completion of practicals is obligatory before the exam.
5. The exam of the subject takes place orally. Students ask two questions and have a max. 30 minutes to prepare.
Any changes or modifications to the conditions for completing the course due to the COVID19 pandemic, or other serious reasons, are continuously published on the electronic bulletin board of the course.

Learning outcomes:
The subject significantly deepens knowledge from the bachelor's degree. The student should gain an overview of the basic biochemical processes in plants. Emphasis is placed on understanding the principles of their functioning and their significance for plants. Acquaintance of students with basic biochemical research methods of plant metabolism within the practical part. The result of education is also the ability to process and express own results.

Brief outline of the course:

Recommended literature:
Masarovičová E., Repčák M. et al. Fyziológia rastlín. 2. dopl. vydanie. Vyd. UK Bratislava 2008;
Taiz L.et al. Plant Physiology and Development. Sixth editon. Sinauer ass.,Sunderland 2014;
Repčák M. et al. Návody na cvičenia z fyziológie rastlín. 4. preprac. vyd. UPJŠ

Košice 2014
Bhatla S.C., Lal M.A. Plant Physiology, development and metabolism. Springer Nature Singapore Pte Ltd. 2018

Course language:

Notes:

Course assessment
Total number of assessed students: 127

A	B	C	D	E	FX
22.83	20.47	18.9	15.75	19.69	2.36

Provides: doc. RNDr. Peter Paľove-Balang, PhD.

Date of last modification: 31.07.2022

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/EP/14	**Course name:** Population Ecology

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

Number of ECTS credits: 3

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

Course level: II.

Prerequisities:

Conditions for course completion:
Oral examination
Running evaluation: active (100%) participation in seminars and lectures
preparation of the presentation to the given topic

Learning outcomes:

Brief outline of the course:
Population ecology includes study of the structure and dynamics of populations (chose population characteristics such as density/abundance, distribution/population dispersion patterns, natality, mortality) interactions between populations of organisms and environmental factors based on mathematical models, theories, and population methods applied in various ecosystems. Population ecology elucidates growth models and changes in populations.

Recommended literature:
Rockwood Larry L., 2006: Introduction to population ecology, 339 pp., Malden, Mass.: Blackwell

Course language:

Notes:

Course assessment
Total number of assessed students: 41

A	B	C	D	E	FX
63.41	7.32	24.39	4.88	0.0	0.0

Provides: RNDr. Natália Raschmanová, PhD., univerzitná docentka

Date of last modification: 11.07.2022

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/IMUC1/03	**Course name:** Practicals in Immunology

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: 1.

Course level: II.

Prerequisities: ÚBEV/IMU1/03

Conditions for course completion:
activity at the lessons, protocols from practical work,
oral examination

Learning outcomes:
The practical course will focus on basic techniques and skills in immunology laboratories in order to have technical foundation to suggest experimental analysis of some immunological questions.

Brief outline of the course:
Special immunology practicals cover common immunological techniques as well as techniques relevant to the research projects at the department. The main aim is to understand the host immune response to infection. Practicals also include a study of the histophysiology of animal immune organs. The students will learn to perform immunological experiments, including critical evaluation of the results.

Recommended literature:
Study materials provided by teacher.

Course language:

Notes:

Course assessment
Total number of assessed students: 381

A	B	C	D	E	FX
69.82	19.69	9.71	0.52	0.0	0.26

Provides: RNDr. Vlasta Demečková, PhD., univerzitná docentka

Date of last modification: 22.09.2023

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: 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: 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: 62

abs	n
9.68	90.32

Provides: Mgr. Agata Dorota Horbacz, PhD.

Date of last modification: 29.03.2022

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 2

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

Provides: PhDr. Dušan Hruška, PhD.

Date of last modification: 27.04.2022

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ VKKI/15	**Course name:** Selected topics in clinical immunology

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

Number of ECTS credits: 5

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:
oral exam, active participation on exercises

Learning outcomes:

Brief outline of the course:
The aim is to underline the importance of basic immunology knowledge in clinical immunological practice. To understand the pathophysiology of selected diseases that are immunologically based, the signs, symptoms and possibilities of the investigation methods used in their detection.
HYPERSENSITIVE REACTIONS:
ALLERGY: Anaphylaxis, Atopy
IMMUNITY AND MICROORGANISMS
Defense against parasites
Defense against bacteria
Defense against the virus (HIV)
TRANSPLANTATION
Basic terms.
Graft-versus-host (GvH) and host-versus-graft (HvG) reactions.
IMMUNITY AND TUMORS
Malignant Transformation
Tumor antigens
Effector mechanisms of antitumor immunity
Escape mechanisms of tumor cells from immune surveillance
Tumor immunotherapy

Recommended literature:
Masseyeff,R.F., Albert,W.H., Staines,N.A.: Methods of immnological analysis I - III., 1993.
Robert R. Rich, Thomas A. Fleisher, Harry W. Schroeder Jr., Cornelia M. Weyand, David B. Corry, Jennifer M. Puck: Clinical Immunology - 6th Edition - Elsevier

Course language:
English

Notes:

Course assessment
Total number of assessed students: 58

A	B	C	D	E	FX
70.69	25.86	3.45	0.0	0.0	0.0

Provides: RNDr. Vlasta Demečková, PhD., univerzitná docentka

Date of last modification: 11.07.2022

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ VKH1/03	**Course name:** Selected topics in herpetology

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: distance, present

Number of ECTS credits: 4

Recommended semester/trimester of the course: 2.

Course level: II., III.

Prerequisities:

Conditions for course completion:
Field excursion
Oral examination.

Learning outcomes:
To broaden the knowledge of students on evolution, taxonomy, morphology, ecology and ecology of reptiles aquired before in the subject Zoology.

Brief outline of the course:
Systematical overview of amphibia and reptilia with a classification on species level. Phylogenetical development of amphibia and reptilia. Charcteristics of morphological and ecophysiological adaptations. Adaptaions on the significant abiotic and biotic factors (food, tepmerature,substrate, humidity, etc.). Selected aspects of population dynamics of some groups. Behavioral manifestations of amphibia and reptilia from a comparative aspect.

Recommended literature:
1. BARUŠ V. a kol.: Reptiles-Reptilia (Fauna of the ČSFR),Prague, 1992 (in Czech)
2. BARUŠ V. a kol.: Amphibia (Fauna of the ČSFR). Prague,1992. (in Czech)
3. OLIVA O., HRABĚ S., LÁC J. : Vertebrates of Slovakia I. Bratislava, 1968 (in Slovak
4. ROČEK Z.: Studies in Herpetology. Praha, 1986.
5. ZWACH I. : Our species of amphibia and reptilia on the photograph. Prague,1990.
6. DIESENER G., REICHHOLF J.: Amphibia and reptilia. Bratislava,1997

Course language:

Notes:

Course assessment
Total number of assessed students: 169

A	B	C	D	E	FX	N	P
88.76	4.14	2.37	0.0	0.0	0.0	0.0	4.73

Provides: RNDr. Igor Majláth, PhD.

Date of last modification: 16.05.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ EKP1/04	**Course name:** Soil Ecology

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

Number of ECTS credits: 5

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

Course level: II.

Prerequisities:

Conditions for course completion:
Successful completion of the course requires active participation in lectures, preparation and presentation of a PPT presentation on the assigned topic (short literature research), processing of the assigned task in practical exercises and presentation of the results of the task, passing the oral examination.

Learning outcomes:
The goal of the course is to understand soil as a heterogeneous substrate and environment for organisms, with an emphasis on the mineral and organic components of soil that are essential for the existence and development of populations of living organisms.

Brief outline of the course:
The subject covers characterization of components of the soil environment, microclimate, nutrient cycling and energy flow. It deals with soil-forming factors and processes, soil organisms microbial communities, plant roots, invertebrate communities) and functioning of the soil system (decomposition, litter system, rhizosphere, drillosphere, termitosphere).

Recommended literature:
Coleman D. C., Crossley D. A. jr.: Fundamentals of soil ecology. Academic Press, 1995
Lavelle P., Spain A. V.: Soil ecology. Kluwer Academic Publishers. Dordrecht-Boston-London, 2001
Dunger W., Fiedler H. J.: Methoden in Bodenbiologie. VEB Gustav Fischer Verlag, Jena, 1989
Šantručková H., Kaštovská E., Bárta J., Miko L., Tajovský K.: Ekologie pudy. Episteme, 2018

Course language:

Notes:

Course assessment
Total number of assessed students: 177

A	B	C	D	E	FX
55.37	31.07	10.73	1.69	1.13	0.0

Provides: RNDr. Peter Ľuptáčik, PhD.

Date of last modification: 21.02.2024
Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 1.

Course level: I., II., P

Prerequisities:

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

Learning outcomes:
Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.

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

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.
JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.
KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.
KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.
LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.
SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.
VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 15781

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
85.74	0.06	0.0	0.0	0.0	0.04	9.0	5.15

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

Date of last modification: 07.02.2024

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 2.

Course level: I., II., P

Prerequisities:

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

Learning outcomes:
Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.

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

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.
JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.
KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.
KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.
LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.
SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.
VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 13802

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
83.85	0.49	0.01	0.0	0.0	0.04	11.17	4.43

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

Date of last modification: 07.02.2024

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 3.

Course level: I., II.

Prerequisities:

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

Learning outcomes:
Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.

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

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.
JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.
KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.
KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.
LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.
SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.
VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 9334

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
87.96	0.06	0.01	0.0	0.0	0.02	4.92	7.03

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

Date of last modification: 07.02.2024

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course: 4.

Course level: I., II.

Prerequisities:

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

Learning outcomes:
Sports activities in all their forms prepare university students for their professional and personal life. They have a great impact on physical fitness and performance. Specialization in sports activities enables students to strengthen their relationship towards the selected sport in which they also improve.

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

Recommended literature:
BENCE, M. et al. 2005. Plávanie. Banská Bystrica: FHV UMB. 198s. ISBN 80-8083-140-8. [online] Dostupné na: https://www.ff.umb.sk/app/cmsFile.php?disposition=a&ID=571
BUZKOVÁ, K. 2006. Fitness jóga, harmonické cvičení těla I duše. Praha: Grada. ISBN 8024715252.
JARKOVSKÁ, H, JARKOVSKÁ, M. 2005. Posilování s vlastním tělem 417 krát jinak. Praha: Grada. ISBN 9788024757308.
KAČÁNI, L. 2002. Futbal:Tréning hrou. Bratislava: Peter Mačura – PEEM. 278s. ISBN 8089197027.
KRESTA, J. 2009. Futsal.Praha: Grada Publishing, a.s. 112s. ISBN 9788024725345.
LAWRENCE, G. 2019. Power jóga nejen pro sportovce. Brno: CPress. ISBN 9788026427902.
SNER, Wolfgang. 2004. Posilování ve fitness. České Budějovice: Kopp. ISBN 8072322141.

STACKEOVÁ, D. 2014. Fitness programy z pohledu kinantropologie. Praha: Galén. ISBN 9788074921155.
VOMÁČKO, S. BOŠTÍKOVÁ, S. 2003. Lezení na umělých stěnách. Praha: Grada. 129s. ISBN 8024721743.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 5846

abs	abs-A	abs-B	abs-C	abs-D	abs-E	n	neabs
82.54	0.27	0.03	0.0	0.0	0.0	8.24	8.91

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

Date of last modification: 07.02.2024

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚBEV/ BKB/20	**Course name:** Stem Cell Biology

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: 1., 3.

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:
The aim of the course is to ground students with basic knowledge about biology of hematopoietic stem cells and about the embryonic, adult and cancer stem cells. The purpose of the course is to acquaint student with regulation of self-renewal, proliferation, differentiation and plasticity of stem cells, as well as the humoral factors involved in these processes. Moreover, the microenvironment of stem cells and clinical use of cytokines and hematopoietic stem cells will be discussed during the course, together with the induced pluripotent stem cells and potential usage of stem cells in regenerative medicine.

Brief outline of the course:
1. Stem cell, the features of stem cells;
2. Pluripotent/multipotent hematopoietic stem cells;
3. The investigation methods of stem cells, the models of functional organization of population of hematopoietic stem cells, differentiation antigens;
4. Myeloid hematopoietic stem cell;
5. Megakaryocyte–erythroid progenitor cells;
6. Common lymphoid progenitor;
7. Microenvironment of stem cells, homing and mobilization of hematopoietic stem cells;
8. Plasticity of stem cells and factors regulating self-renewal, proliferation and differentiation;
9. Cytokines, hematopoietic growth factors and interleukins in hematopoiesis;
10. Clinical use of cytokines and hematopoietic stem cells;
11. Embryonic and induced pluripotent stem cells and their potential in regenerative medicine;
12. Adult stem cells and their potential in regenerative medicine;
13. Cancer stem-like cells.

Recommended literature:
Farrar W.B.: Cancer Stem Cells. Cambridge University Press, 2010
Majumder S.: Stem Cells and Cancer. Springer Science+Business Media, LLC 2009
Scatena R., Mordente A., Giardina B.: Advances in Cancer Stem Cell Biology. Springer Science +Business Media, LLC 2012

Simmons A.: Hematology. A Combined Theoretical & Technical Approach, W.B. Saunders Company, Philadelphia, 1989
Yu J.S.: Cancer Stem Cells. Methods and protocols. Humana Press, a part of Springer Science +Business Media, LLC 2009
Relevantné vedecké práce z uvedenej problematiky publikované v odborných časopisoch a dostupné v medzinárodných databázach (https://www.ncbi.nlm.nih.gov/pubmed/; https://www.scopus.com/search/form.uri?display=basic; https://www.sciencedirect.com/), napr.
Zakrzewski a kol., Stem cells: past, present, and future. Stem Cell Research & Therapy (2019), 10:68: https://doi.org/10.1186/s13287-019-1165-5
Batlle – Clevers, Cancer stem cells revisited. Nature medicine (2017), 23 (10): doi:10.1038/nm.4409
Tweedel, The Adaptability of Somatic Stem Cells: A Review. Journal of Stem Cells and Regenerative Medicine (2017), 13(1)
Ferraro – Lo Celso. Adult stem cells and their niches. Adv Exp Med Biol. (2010), 695: 155–168. doi:10.1007/978-1-4419-7037-4_11

Course language:

Notes:

Course assessment
Total number of assessed students: 39

A	B	C	D	E	FX
35.9	10.26	12.82	23.08	15.38	2.56

Provides: prof. RNDr. Peter Fedoročko, CSc., RNDr. Jana Vargová, PhD.

Date of last modification: 28.09.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚBEV/ SVK/01	**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: 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: 31

abs	n
100.0	0.0

Provides:
Date of last modification: 30.11.2021
Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

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

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II., P

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: 232

abs	n
36.64	63.36

Provides: Mgr. Dávid Kaško, PhD.

Date of last modification: 29.03.2022

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice	
Faculty: Faculty of Science	
Course ID: ÚTVŠ/ KP/12	**Course name:** Survival Course

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

Number of ECTS credits: 2

Recommended semester/trimester of the course:

Course level: I., II., P

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 the tasks defined in the course syllabus

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 should:
- acquire knowledge about safe stay and movement in natural environment,
- obtain theoretical knowledge and practical skills to solve extraordinary and demanding situations connected with survival and minimization of damage to health,
- be able to resist and face situations related to overcoming barriers and obstacles in natural environment,
- be able implement the acquired knowledge as an instructor during summer sport camps for children and youth within recreational sport.

Brief outline of the course:
Brief outline of the course:
1. Principles of conduct and safety in the movement in unfamiliar natural environment
2. Preparation and guidance of a hike tour
3. Objective and subjective danger in the mountains
4. Principles of hygiene and prevention of damage to health in extreme conditions
5. Fire building
6. Movement in the unfamiliar terrain, orientation and navigation
7. Shelters
8. Food preparation and water filtering
9. Rappelling, Tyrolian traverse
10. Transport of an injured person, first aid

Recommended literature:

1. JUNGER, J. et al. Turistika a športy v prírode. Prešov: Fakulta humanitných a prírodných vied PU v Prešove. 2002. 267s. ISBN 80-8068-097-3.
2. PAVLÍČEK, J. Člověk v drsné přírodě. 3. vyd. Praha: Práh. 2002. ISBN 8072520598.
3. WISEMAN, J. SAS: příručka jak přežít. Praha: Svojtka & Co. 2004. 566s. ISBN 8072372807.

Course language:
Slovak language

Notes:

Course assessment
Total number of assessed students: 461

abs	n
46.2	53.8

Provides: Mgr. Ladislav Kručanica, PhD.

Date of last modification: 16.05.2023

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/UK/17	**Course name:** Urbánna ekológia

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: distance, present

Number of ECTS credits: 3

Recommended semester/trimester of the course: 2.

Course level: II., III.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 39

A	B	C	D	E	FX	N	P
84.62	0.0	0.0	0.0	0.0	0.0	0.0	15.38

Provides: doc. RNDr. Marcel Uhrin, PhD., univerzitný profesor

Date of last modification: 20.09.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/VVPP/23	**Course name:** Vektory a vektormi prenášané patogény

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

Number of ECTS credits: 4

Recommended semester/trimester of the course:

Course level: II.

Prerequisities:

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 0

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

Provides: RNDr. Viktória Majláthová, PhD., univerzitná docentka

Date of last modification: 24.02.2023

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ ZOG1/03	**Course name:** Zoogeography

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: I., II.

Prerequisities:

Conditions for course completion:
Active participation in seminars.
Preparation of oral presentation to a selected topic.
Completion of two semestral written examinations.
Oral examination.

Learning outcomes:
The main goal of the subject is to get knowledge on the basic reasons of recent distribution of the animals on the Earth, zoogeographic regionalization of the Earth´s surface and human influence on the faunal distribution in the history.

Brief outline of the course:
This course will review our current understanding of the patterns of animal distribution and the processes that influence distributions of species and their attributes. Zoogeography will integrate information on the historical and current ecology, genetics, and physiology of animals and their interaction with environmental processes (continental drift, climate) in regulating geographic distributions. The course will emphasize descriptive and analytical approaches useful in hypothesis testing in zoogeography and will illustrate applied aspects of zoogeography (e.g. refuge design in conservation).

Recommended literature:
Buchar, J., 1983: Zoogeografie. SPN Praha
Darlington, P.J., 1998: Zoogeography: The geographical distribution of animals. Krieger, USA
Lomolino M.V., Brown J.H., Riddle B. R., 2005: Biogeography. Sinauer Associates, 1-845
Plesník, P., Zatkalík, F., 1996: Biogeografia. Vysokoškolské skriptá, PríFUK Bratislava

Course language:

Notes:

Course assessment
Total number of assessed students: 1033

A	B	C	D	E	FX
25.56	23.14	23.43	18.49	7.74	1.65

Provides: prof. RNDr. Ľubomír Kováč, CSc., RNDr. Natália Raschmanová, PhD., univerzitná docentka

Date of last modification: 10.12.2021

Approved: prof. RNDr. Ľubomír Kováč, CSc.

COURSE INFORMATION LETTER

University: P. J. Šafárik University in Košice

Faculty: Faculty of Science

Course ID: ÚBEV/ZFZ/14	**Course name:** Zoology and Animal Physiology

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: ÚBEV/EFZ1/03 and ÚBEV/MEB1/03 and ÚBEV/IMU1/03 and ÚBEV/ZOG1/03 and ÚBEV/EB1/99 and ÚBEV/ETO1/03

Conditions for course completion:

Learning outcomes:

Brief outline of the course:

Recommended literature:

Course language:

Notes:

Course assessment
Total number of assessed students: 76

A	B	C	D	E	FX
31.58	31.58	23.68	11.84	1.32	0.0

Provides:

Date of last modification: 06.02.2025

Approved: prof. RNDr. Ľubomír Kováč, CSc.