University: University of Presov

Faculty/university workplace: Faculty of Humanities and Natural Sciences

Code: 2BIO/EROSJEKFZ/22	**Course title:** Ecophysiology

Type, scope and method of educational activity:
Type of educational activity: Lecture
Scope of educational activity: 2 hour per week, 26 per semester
Method of educational activity: Attendance

Number of credits: 4

Recommended semester:

1st year WT	Biology

Study grade: Master

Conditions for passing the course:
Form of assessment:

Continuous evaluation:
Written test
Assessment criteria: A: 100.00 - 90.00 %, B: 89.99 - 80.00 %, C: 79.99 - 70.00 %, D: 69.99 - 60.00 %, E: 59.99 - 50.00 %. FX: 49,99 % and below.
Final evaluation:
Continuous assessment

Learning outcomes:
Knowledge gained:
The graduate of the course will be able to:
- demonstrate general knowledge of animal and human ecophysiology and gain a comprehensive picture of organismal activity in relation to the environment,
- define and interpret in their own words the basic concepts of ecophysiological terminology,
- characterise the environmental factors acting on a living organism - abiotic and biotic factors,
- explain the morphological and physiological adaptations of organisms to different environmental factors,
- characterise climate, climate and its changes and effects on organisms,
- describe the trophic factors, the mode of uptake of substances,
- explain biochemical cycles, adaptation to the environment and way of life,
- characterise homeostasis, the relative stability of the internal environment and feedback mechanisms,
- explain the importance of stress for the organism, describe the stress response and what determines it,
- describe the effect and significance of stress on the organism, the individual stressors and the specificity of the stress response,
- characterise the pathways that transmit signals about the action of stressors, catecholamines, glucocorticoids,
- explain oxidative stress and markers of oxidative stress,
- investigate the functional interconnection of individual systems and physiological processes in terms of their integration and the regulation of the behaviour of animal organisms in the environment,
- assess the difference between animal and human physiological functions and the ability to adapt to the external environment.
Skills acquired:
The student:
- search for relevant professional information on a given topic in professional literature and information media, work with relevant information, develop reading literacy in the field of

professional biological text,
- independently prepare and present a seminar paper,
- have the ability to discuss a given issue, to argue and defend one's own position.
Competences acquired:
The student:
- is able to use the acquired knowledge and skills purposefully and creatively in solving tasks of basic and applied physiological research and to respond to the current needs of social practice.

Course content:
Environmental factors acting on a living organism - abiotic factors (heat, light, light, radiation, water, air, soil).
Climate. Environmental factors acting on a living organism - biotic factors intraspecific (homotypic, intraspecific) relationships. Biotic factors interspecific (interspecific, heterotypic) relationships - neutral relationship, probiosis - carposis, symbiosis, antibiosis.
Trophic factors. Heterotrophic nutrition, food quality, effect of nutrition on fitness, storage substances, food specialization. Biochemical cycles, adaptation to the environment and way of life.
Homeostasis. Relative stability of the internal environment. Feedback mechanism.
Characteristics and importance of stress for the organism. Stress response. Conditioning of the stress response. Stress and emotions. Effect of acute and chronic stress. Stressors. Eustress. Distress. Specificity of the stress response. Pathways transmitting signals about the action of stressors.
Catecholamines. Glucocorticoids. Oxidative stress. Selected biomarkers of oxidative stress.

Recommended literature :
STEVENS, M. 2013. Sensory Ecology, Behaviour, and Evolution. Oxford University Press. 264pp. ISBN 978-0-19-960178-3.
MARTÍNEZ DEL RIO, C. 2007. Physiological Ecology: How Animals Process Energy, Nutrients, and Toxins. 744pp. ISBN: 978-0-69-107453-5.
WILLMER, P., STONE, G., JOHNSTON, I. 2005. Environmental Physiology and Animals. New York: Blackwell Publishing. Second Edition. 713pp. ISBN 1-4051-0724-5.
BARTH, F., G., SCHMID, A. 2001. Ecology of Sensing. Berlin: Springer Verlag. 341pp. ISBN 3-540-66901-9.

Notes:
Student load: 120 hours
Direct education: 20 hours
Self-study: 60 hours
Guided work: 40 hours

Course evaluation:
Total number of students evaluated: 108

A	B	C	D	E	FX

Lecturers:
prof. RNDr. Jarmila Bernasovská, PhD., guarantor
prof. MVDr. Janka Poráčová, PhD., MBA, co-guarantor, lecturer
RNDr. Mária Konečná, PhD., co-guarantor, lecturer, examiner, instructor, seminary supervisor

Date of last change: 01.09.2023

Approved by: prof. RNDr. Jarmila Bernasovská, PhD.