Course name:

BIOLOGICAL CLOCKS IN LIVING ORGANISMS

ECTS	**2**
Course status	**complementary**
Course final assessement/evaluation of outcomes	**exam**
Prerequisites	**passing the subject Animal Physiology and Endocrinology**

Main field of study:

ANIMAL SCIENCES

Profile of study	**General-academic**
The code of studies (education level)	**SM (master)**
Semester of studies	**summer**
Language of instruction	**English**

Course offered by:

Name of faculty offering the course	**Faculty of Animal Science**
Name of department offering the course	**Department of of Animal Nutrition, and Biotechnology, and Fisheries**
Course coordinator	**prof. Dorota Zięba-Przybylska**

Learning outcomes of the course:

Symbol of outcome	Description of learning outcome	Reference to	
		main field of study outcomes	discipline#
KNOWLEDGE – student knows and/or understands:			
BCL_W1	basic types of cell, principles and techniques for conducting research work; basic theories in the field of in vitro cell culture	ZOO2_W01	RZ
BCL_W2	knows to an advanced extent the range of in vitro cell culture techniques and methods used in animal sciences, allowing for the interpretation of the results of conducted research	ZOO2_W05	RZ
BCL_W3	general principles of creating and developing forms of individual entrepreneurship, using knowledge in the fields of science and scientific disciplines, relevant to the studied field	ZOO2_W13	RZ
SKILLS – student is able to:			
PPP_U1		……_U..	
SOCIAL COMPETENCE- student is ready to:			

BCL_K1	earning and continuous education throughout life, can organize the learning process of other people	ZOO2_K01	RZ
BCL_K2	solve complex decision problems related to the use of animals and is aware of the need to make a critical evaluation of the results of the use of various methods and	ZOO2_K05	RZ
BCL_K3	act in accordance with the principles of ethics in professional and social work	ZOO2_K08	RZ

Teaching contents:

Lectures		**15**	**hours**
Topics of the lectures	History of discovery of biological clock.		
	Melatonin - characteristics in animal and plant species.		
	Seasonality of reproduction in seasonal long and short-day breeders		
	Review of phenomena connected with seasonality – birds migration, moulting, stupor, winter sleep, aestivation, lactation, circardian physiological processes, circaanual processes		
	Review of phenomena connected with seasonality – birds migration, moulting, stupor, winter sleep, aestivation, lactation, circardian physiological processes, circaanual processes		
	The molecular basis of the biological clocs.		

Accomplished learning outcomes	*BCL_W1, W2, W3, BCL_K1, K2, K3*
Verification methods, rules and criteria of outcome assessment	*open question test (positive answers at least 60%)*

Classes		**…**	**hours**
Topics of the classes			

Accomplished learning outcomes	*symbol of learning outcomes for the classes*
Verification methods, rules and criteria of outcome assessment	*together with participation in the final asessement (in %)*

Seminars		**…**	**hours**
Topics of the seminars			

Accomplished learning outcomes	*symbol of learning outcomesof the seminars*
Verification methods, rules and criteria of outcome assessment	*together with participation in the final asessement (in %)*

References:

Basic	*1. Cymborowski B. Zegary biologiczne. PWN 1987.* *2. Sotowska-Brochocka J. Fizjologia zwierząt, zagadnienia wybrane. Wydawnictwo Uniwersytetu Warszawskiego, 81-123, 290-302, 2001.* *3. Traczyk Z. Fizjologia Człowieka w zarysie. Wydawnictwo Lekarskie PZWL, Warszawa 2000.*
Supplementary	*1. D.A. Zieba, B. Klocek, G.L. Williams, K. Romanowicz, L. Boliglowa, M. Wozniak. In vitro evidence that leptin suppresses melatonin secretion during long days and stimulates its secretion during short days in seasonal breeding ewes. Domest. Anim. Endocrinol. 2007; 33(3): 358-365.* *2. D.A. Zieba, M. Szczesna, B. Klocek-Gorka, E. Molik, T. Misztal, G.L. Williams, K. Romanowicz, E. Stepien, D.H. Keisler, M. Murawski. Seasonal effects of central leptin infusion on melatonin and prolactin secretion and on SOCS-3 gene expression in ewes. J. Endocrinol. 2008; 198: 147-155*

Structure of learning outcomes:

Discipline: # RZ				*2.0*	ECTS**
Discipline: # (*provide appripriate symbol - if the course relates to more than one academic discipline*)				*…*	ECTS**
Structure of student activities:					
Contact hours		25	hours	1	ECTS**
including:	lectures	15	hours		
	classes and seminars	0	hours		
	consultations	7	hours		
	participation in research	0	hours		
	mandatory trainerships	0	hours		
	participation in examinations	3	hours		
e-learning		0	hours	…	ECTS**
student own work		25	hours	1	ECTS**

Syllabus valid from the academic year 2021/2022

*** where 10 hours of classes = 1 ECTC (in case of 15 h → 2 ECTS)**

** stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes

academic discipline code: RZ - animal science and fishery, PB - biological sciences, etc.