



UNIwersYTET  
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W POZNANIU

## Mammals monitoring methods

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Environmental Protection	<b>Didactic cycle</b> 2023/24	
<b>Speciality</b> -	<b>Subject code</b> 01EVPS.22N.12961.23	
<b>Department</b> Faculty of Biology	<b>Lecture languages</b> English	
<b>Study level</b> Second-cycle programme	<b>Mandatory</b> Elective	
<b>Study form</b> Full-time	<b>Block</b> Subjects not assigned	
<b>Education profile</b> General academic		
<b>Subject coordinator</b>	Leszek Rychlik	
<b>Lecturer</b>	Leszek Rychlik, Mirosław Jurczyszyn, Oliwia Sęk	
<b>Period</b> Semester 2	<b>Activities and hours</b> • Lecture: 10, Graded credit • Classes: 20, Graded credit	<b>Number of ECTS points</b> 3

## Goals

Code	Goal
C1	1) To provide students with knowledge of methods and equipment used today in mammalian research, especially in field investigation and monitoring.
C2	2) To teach students the selection of correct methods and equipment in relation to the morphology, physiology, behaviour and eco-morphotype of the animals studied.
C3	3) To teach students the selection of proper methods and equipment in relation to the study aims (choice between observation, harvesting, measurements, experiment, or tracking and monitoring).
C4	4) To familiarize students with the basic principles of ethical use animals and how to eliminate or reduce mortality, suffering and stress in the mammals studied.
C5	5) To acquaint students with the basic principles of designing and conducting research, experiments and monitoring, analyzing data using simple mathematical and statistical tools and the correct interpretation of results, i.e. skills useful for the completion of master's thesis and research papers.
C6	6) To develop skills in using literature sources.

## Entry requirements

Basic knowledge of systematics, biology and ecology of vertebrates. Basic knowledge and skills in mathematics, physics and chemistry. Ability to read and understand scientific literature in English. Effective communication and readiness to learn.

## Subject's learning outcomes

Code	Outcomes in terms of	Learning outcomes	Examination methods
<b>Knowledge - Student:</b>			
W1	recognizes mammals belonging to main systematic groups (orders) and ecomorphotypes, can indicate their characteristic features in physiology and behaviour as well as typical habitats.	EVP_K2_W01, EVP_K2_W04	Written colloquium
W2	selects and applies methods and equipment optimally suited to the purposes of planned / conducted study on mammals.	EVP_K2_W01, EVP_K2_W04, EVP_K2_W08	Written colloquium, Test
<b>Skills - Student:</b>			
U1	selects and applies methods and equipment optimally suited to the purposes of planned / conducted study on mammals.	EVP_K2_U02, EVP_K2_U03	Written colloquium, Test
U2	selects and applies methods and equipment optimally suited to the physiology, ecomorphology and behaviour of the mammals studied, so as to ensure effective data collection while eliminating or reducing mortality, suffering and stress in animals.	EVP_K2_U02, EVP_K2_U03, EVP_K2_U04	Written colloquium, Test
U3	is able to design and conduct research, experiments and monitoring of mammals, as well as analyse collected data and present in a synthetic way and interpret the results of research and monitoring.	EVP_K2_U02, EVP_K2_U03, EVP_K2_U08, EVP_K2_U09	Report, Multimedia presentation
U4	finds useful information from scientific literature and online sources.	EVP_K2_U01, EVP_K2_U10	Report, Multimedia presentation
<b>Social competences - Student:</b>			

K1	is able to design and conduct research, experiments and monitoring of mammals, as well as analyse collected data and present in a synthetic way and interpret the results of research and monitoring.	EVP_K2_K03, EVP_K2_K04	Report, Multimedia presentation
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### Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Survey of extant subclasses and orders of mammals in terms of the diversity of their morphology, physiology and eco-morphological types.	W1, U3	Lecture, Classes
2.	Presentation of different types of traps and methods of catching mammals, adapted to their size, ecomorphology and behaviour.	W2, U1, U2	Lecture, Classes
3.	Presentation of different ways of short-term and long-term marking of live mammals as well as measuring, weighing, determining sex and condition, collecting tissues for testing.	W2, U1, U2	Lecture, Classes
4.	Acquaintance with methods of estimating and monitoring changes in species diversity, population size and space use.	W2, U1, U3	Lecture, Classes
5.	Acquaintance with methods of direct and remote observation and detection of various mammals (using shelters, binoculars, night vision, radio-telemetry and satellite telemetry, video-recording, photo-traps, ultrasound detection)..	W2, U1, U3	Lecture, Classes
6.	Presentation of methods of detection and estimation of the number of mammals based on traces they left in the environment (tracks, droppings, foraging traces, burrows and nests).	W2, U1, U3	Lecture, Classes
7.	Acquainting with basic methods of data analysis (from trapping, monitoring, experiments, video-recording) as well as of elaborating and presenting results.	W2, U4, K1	Lecture, Classes
8.	Classification of methods in terms of the degree of invasiveness (arduousness), presentation of ways to eliminate or reduce mortality, suffering and stress in studied mammals of different species. Presentation of the principles of ethical conduct in research (including the "3R" principles: refining, reducing, replacing).	U1, U2, U4, K1	Lecture, Classes

### Course advanced

Activities	Teaching and learning methods and activities
Lecture	Lecture with a multimedia presentation of selected issues, Discussion, Work with text, Case study
Classes	Work with text, Case study, Classes method, Laboratory method, Demonstration and observation, Work in groups

<b>Activities</b>	<b>Credit conditions</b>
Lecture	bardzo dobry (bdb; 5,0): 91-100% of correct answers or points dobry plus (+db; 4,5): 81-90% dobry (db; 4,0): 71-80% dostateczny plus (+dst; 3,5): 61-70% dostateczny (dst; 3,0): 51-56% niedostateczny (ndst; 2,0): less than 50% of correct answers or points
Classes	bardzo dobry (bdb; 5,0): 91-100% of correct answers or points dobry plus (+db; 4,5): 81-90% dobry (db; 4,0): 71-80% dostateczny plus (+dst; 3,5): 61-70% dostateczny (dst; 3,0): 51-56% niedostateczny (ndst; 2,0): less than 50% of correct answers or points

## Literature

### Obligatory

1. 1. Feldhamer G.A., Drickamer L.C., Vessey S.H. & Merritt J.F.: Mammalogy: adaptation, diversity, and ecology., WBC/McGraw-Hill, Boston, 2014
2. 2. Vaughan T.A., Ryan J.M. & Czaplewski N.J.: Mammalogy., Jones and Bartlett Learning, Burlington, MA, USA, 2015
3. 3. Nova J. Silvy: The The wildlife techniques manual. Volume 1: Research, Volume 2: Management. ., Johns Hopkins University Press, New York, 2012

### Optional

1. 4. McComb B et al.: Monitoring animal populations and their habitats: A practitioner, CRC Press Inc., , 2010
2. 5. Barrett W & Peles JD (Eds): Landscape ecology of small mammals., Springer Verlag, , 2013
3. 6. Scientific articles suggested by the teachers.

## Calculation of ECTS points

<b>Activity form</b>	<b>Activity hours*</b>
Lecture	10
Classes	20
Preparation for classes	10
Reading the indicated literature	20
Report preparation	5
Preparation of a multimedia presentation	5
Preparation of a demonstration	5
Preparation for the exam	15
<b>Student workload</b>	<b>Hours</b> 90
<b>Number of ECTS points</b>	<b>ECTS</b> 3

\* hour means 45 minutes

## Learning outcomes

Code	Content
EVP_K2_K03	The graduate is ready to correct identification and resolution of dilemmas related to scientific activity and its practical use in the field of environmental protection
EVP_K2_K04	The graduate is ready to recognition of the importance of professional, ethical and social responsibility for the state of the environment
EVP_K2_U01	The graduate can creatively use his/her knowledge in the field of environmental protection, i.e. search for, formulate and solve complex problems, conduct a critical analysis of information from various sources
EVP_K2_U02	The graduate can independently plan and conduct research as well as analyse the correctness of tasks performed and the reliability of the results obtained, and draw conclusions useful in environmental protection
EVP_K2_U03	The graduate can use the tools, methods and research techniques applied in laboratory and field work, especially for monitoring and assessment of the state of the environment
EVP_K2_U04	The graduate can analyse, evaluate and - consequently - predict the direct or indirect impact of humans on other organisms and the environment
EVP_K2_U08	The graduate can cooperate and work in a group, playing various roles in it
EVP_K2_U09	The graduate can lead a team and coordinate its work
EVP_K2_U10	The graduate can systematically update knowledge of environmental protection and know its practical applications
EVP_K2_W01	The graduate knows and understands to a deeper extent - theories, processes, facts and objects related to general knowledge about environmental protection and related sciences
EVP_K2_W04	The graduate knows and understands to a deeper extent - rules of practical use of theoretical knowledge in assessing the condition of terrestrial environments and maintaining or restoring them to their proper condition
EVP_K2_W08	The graduate knows and understands to a deeper extent - economic, legal and social conditions related to scientific, educational and promotional activities in the field of environmental protection