

Subject card

Subject name and code	Applied Evolutionary Science, PG_00179261						
Field of study	Biology						
Date of commencement of studies	October 2024		Academic year of realisation of subject				
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		English english		
Semester of study	6		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Mammalian Evolutionary Genomics -> Department of Evolutionary Genetics and Biosystematics -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Małgorzata Pilot				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		0.0		20.0	50
Subject objectives	1. Introduction of the key concepts in evolutionary biology and research methods used by this discipline 2. Introduction to applications of evolutionary theory in other disciplines 3. Understanding the importance and practical applications of evolutionary theory						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
			-Knowledge of key concepts in evolutionary biology; -Knowledge of the practical applications of evolutionary theory; -Knowledge of research methods used in evolutionary biology and their potential for application in other disciplines; Ability to read and comprehend scientific texts concerning the practical applications of the theory of evolution		[SW2] presentation/project/paper/report [SK1] oral statement/conversation/discussion		

Subject contents	Contemporary human evolution and its practical consequences		
	Consequences of too fast evolution: epidemics, cancer, and antibiotic resistance		
	Consequences of too slow evolution: the problem of adapting to climate and environmental change		
	Evolutionary game theory and its applications in economics, politics, psychology, sociology, and everyday life		
	Diversity and equality in evolution		
	Digital evolution: evolutionary programming, evolutionary algorithms, evolutionary robotics, computer viruses		
	Cultural evolution: language, memes, social structures, the concept of the "extended phenotype"		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Presentation of a selected topic	51.0%	100.0%
Recommended reading	Basic literature	Carroll, S. P., Jørgensen, P. S., Kinnison, M. T., Bergstrom, C. T., Denison, R. F., Gluckman, P., ... & Tabashnik, B. E. (2014). Applying evolutionary biology to address global challenges. Science, 346(6207), 1245993.	
		Futuyma, D. J. (1995). The uses of evolutionary biology. Science, 267(5194), 41-42.	
		Gibson, M. A., & Lawson, D. W. (2015). Applying evolutionary anthropology. Evolutionary Anthropology: Issues, News, and Reviews, 24(1), 3-14.	
		Hendry, A. P., Kinnison, M. T., Heino, M., Day, T., Smith, T. B., Fitt, G., ... & Carroll, S. P. (2011). Evolutionary principles and their practical application. Evolutionary Applications, 4(2), 159-183.	
		Kavita, S., & Shinde, S. K. (2023, June). Metaheuristic evolutionary algorithms: Types, applications, future directions, and challenges. In 2023 3rd International Conference on Intelligent Technologies (CONIT) (pp. 1-6). IEEE.	
		Traulsen, A., & Glynatsi, N. E. (2023). The future of theoretical evolutionary game theory. Philosophical Transactions of the Royal Society B: Biological Sciences, 378(1876), 20210508.	
	Supplementary literature		
	eResources addresses		
Example issues/ example questions/ tasks being completed	Practical consequences of human evolution		
	Evolution and the "Diseases of Civilization"		
	Practical consequences of pathogen evolution		
	The contribution of evolutionary theory to sustainable development goals		
	Evolutionary Game Theory in everyday life		
	Applications of evolutionary theory in various scientific disciplines		

Work placement	Not applicable
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