University of Gdańsk

Subject card

Subject name and code	Essential biology, PG_00203323		
Field of study	Medical Biology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	2.0
Learning profile	academic	Assessment form	exam
Conducting unit	Laboratory of Molecular Evolution and Bioinformatics -> Department of Evolutionary Genetics and Biosystematics -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Aleksandra Naczk	
	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	4.0	16.0	50

Subject objectives
1. to learn the fundamentals of the structure, biology and classification of living organisms; 2. to understand the biological processes determining life at different levels of its organisation; 3. to understand the functions and importance of different groups of organisms in nature; 4. to understand the interdependence of interactions between organisms and their environment and between these organisms and each other; 5. to be able to recognise and classify different groups of organisms.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLMEDL3_K01] is aware of the importance of lifelong learning and keeping up to date with developments in medical biology and related disciplines, and applies this knowledge to the planning and design of professional activities	- understands the need for lifelong learning and updating knowledge of medical biology and related disciplines	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report
[BIOLMEDL3_W01] has an advanced knowledge and understanding of the differences in the structure and function of prokaryotic and eukaryotic cells, the structure and properties of the various types of biological macromolecules, the molecular mechanisms of basic metabolic pathways and the flow of genetic information, and the sources of variation in organisms; explains the laws of inheritance	- explains the basic concepts of biology, demonstrates the structure and functional relationships at cellular, tissue, organ and organismal level	[SW4] test/exam - oral or written
[BIOLMEDL3_W02] has an advanced knowledge and understanding of the structure of the animal or human body, processes and functional relationships at the cellular, tissue, organ and organismal levels, as well as physiological and biochemical processes at an advanced level, and the mechanisms of the pathophysiology of diseases, and explains their relationship with behaviour and the organism's	- explains the basic concepts of biology, demonstrates the structure and functional relationships at cellular, tissue, organ and organismal level - explain the basic principles and describe the mechanisms by which life functions at the at the population, biocenosis and ecosystem level	[SW4] test/exam - oral or written
[BIOLMEDL3_W03] has an advanced knowledge and understanding of the characteristics, systematics and evolution of selected groups of organisms, taking into account their molecular basis, and describes the fundamental concepts and mechanisms of evolution; furthermore, the student describes, explains and compares, at an advanced level, the systemic regulatory mechanisms in animal and human organisms (including from an ontogenetic and phylogenetic perspective) and understands the neurobiological and genetic basis of disorders	- presents the characteristics, systematics and evolution of selected groups of organisms	[SW4] test/exam - oral or written
[BIOLMEDL3_U04] synthesises data from different sources and draws appropriate conclusions from them	- can use specialist literature, select information, draw conclusions and express himself/ herself on a given subject in the field of biological sciences	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report

<table>
<tr><td>Subject contents</td><td>Lecture topics:

1) The origins of life on Earth, a review of contemporary theories and views.

2) The world of RNA.

3) Evolutionary history of life on Earth.

4) Levels of organisation of life.

5) Cell biology.

6) Reproduction.

7) Mechanisms of evolution.

8) Basics of taxonomic division of living organisms.

9) Organisation at population, biocenosis and ecosystem level.

10) Features of a biological population.

11) Interspecies interactions.

12) Phylogeography.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Knowledge of basic biology, within the scope of secondary school.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>written exam</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td>Basic literature</td><td>Futuyma DJ. 2005. Evolution. Wydawnictwo Uniwersytetu Warszawskiego.

Freeland JR. 2021. Molecular ecology. Wydawnictwo naukowe PWN.

Dzik J. 2020. Evolution. The creative power of selection. Wydawnictwo Uniwersytetu Warszawskiego.

Dzik J. 2018. Biology or the meaning of life. Wydawnictwo Uniwersytetu Warszawskiego.</td></tr>
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	Supplementary literature	1. Stanley S. M. (2002): Historia Ziemi. Wydawnictwo Naukowe PWN, Warszawa 2. Kunicki-Goldfinger W.J.H. (2001): Życie bakterii. Wydawnictwo Naukowe PWN, Warszawa 3. Weiner J. (2012): Życie i ewolucja biosfery. Podręcznik ekologii ogólnej. Wydawnictwo Naukowe PWN, Warszawa 4. Krzanowska H., Łomnicki A., Rafiński J., Szarski H., Szymura J. M. (2002): Zarys mechanizmów ewolucji. Wydawnictwo Naukowe PWN, Warszawa 5. Yong E. 2018. Mikrobiom. Najmniejsze organizmy, które rządzą światem. Wydawnictwo Uniwersytetu Jagiellońskiego.
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. 95% of the biosphere is made up of just 6 elements, which of the following is not one of these 6: (a) hydrogen (b) phosphorus (c) sulphur (d) potassium 2. Which process related to apoptosis can start near the mitochondrion when cytochrome c molecules enter the cytoplasm: (a) phagocytosis (b) apoptotic vesicle formation (c) caspase cascade (d) nuclease cascade 3. In DNA replication, a newly synthesised DNA strand that is formed continuously and the replication fork moves in a 5 3 direction relative to it is referred to as: (a) delayed strand (b) Okazaki fragments (c) leading strand (d) matrix 4. The maximum number of cell divisions is determined by: (a) the end replication problem (b) the Hayflick limit (c) programmed cell death (d) cytokinesis	
Work placement	Not applicable	

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