

Subject card

Subject name and code	Basic genetics, PG_00146876						
Field of study	Podstawy genetyki - ćwiczenia laboratoryjne (Ćw. laboratoryjne)						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
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		1.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Department of Evolutionary Genetics and Biosystematics -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Anna Wysocka				
	Teachers		dr hab. Anna Wysocka dr Agata Szwarc dr Barbara Wojtasik mgr Michalina Kijowska				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	20.0	0.0	0.0	20
	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	20		1.0		4.0	25
Subject objectives	To familiarize students with the basic issues of genetics, in accordance with the current state of knowledge in this field. Deepening knowledge and understanding of the basic rules of heredity and the basis of genetic variation. To provide knowledge on the mechanisms of gene functioning and interaction, understanding the relationship between genotype and phenotype. Presentation of modern research methods and development of the ability to ask questions, make assessments and solve uncomplicated problems						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[GBEL3_K05] Responsibility for the safety of one's own work and others.	is responsible for the safety of their own work and that of others	[SK8] obserwacja samodzielnej lub zespołowej pracy studenta
	[GBEL3_K07] Lifelong learning and updating knowledge in the field of molecular genetics and other disciplines.	knows the limitations of his/her own knowledge and understands the need for continuous learning and development in the field of genetics	[SK8] obserwacja samodzielnej lub zespołowej pracy studenta
	[GBEL3_W03] The molecular mechanisms of genetic information transmission and gene expression, as well as the molecular and genetic basis of human physiology and diseases, including infectious diseases.	knows the genetic basis of disorders (traits) in animal and plant organisms	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/diskusja [SW2] prezentacja/projekt/referat/raport [SW3] opracowanie tekstowe/praca pisemna [SW5] realizacja zadania problemowego
	[GBEL3_W02] Knowledge of mathematics, physics, and chemistry is necessary for understanding biological phenomena and processes, as well as their application in research methodology.	describes the mechanisms and sources of variability of organisms; explains the rules of inheritance	[SW4] test/egzamin - ustny lub pisemny [SW2] prezentacja/projekt/referat/raport [SW3] opracowanie tekstowe/praca pisemna [SW5] realizacja zadania problemowego
	[GBEL3_W05] the principles of research planning based on achievements in biological sciences and related fields, the potential application of their results in practice, the principles of operation of equipment and apparatus used in molecular genetics research, and the principle of interpreting biological phenomena and processes based on empirical data in research and practical activities, with consideration for sustainable use of biological diversity.	explains the theoretical basis of biological processes based on empirical data in researches and practical activities	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/diskusja [SW2] prezentacja/projekt/referat/raport [SW3] opracowanie tekstowe/praca pisemna [SW5] realizacja zadania problemowego
	[GBEL3_U01] Independently perform practical tasks in the field of biological sciences and related disciplines, formulate research problems, analyze their results, and draw conclusions.	is able to independently perform simple research tasks in the field of genetics, formulate research problems, analyse their results and draw conclusions	[SU1] wypowiedź ustna/rozmowa/diskusja [SU2] prezentacja/projekt/referat/raport [SU3] opracowanie tekstowe/praca pisemna [SU4] test/egzamin - ustny lub pisemny [SU5] realizacja zadania problemowego [SU6] demonstracja umiejętności praktycznych [SU8] obserwacja samodzielnej lub zespołowej pracy studenta
	[GBEL3_K01] The utilization of theoretical knowledge in laboratory and production practice.	is ready to put theoretical knowledge into practice laboratory to be complicit in the principles of teamwork and to be accountable for jointly implemented tasks	[SK8] obserwacja samodzielnej lub zespołowej pracy studenta
	[GBEL3_U03] Proficient in using research equipment and tools, while following the correct sequence of procedures, to conduct basic physical, biological, or chemical observations and measurements in laboratory work within the field of biological sciences.	preserves the correct sequence of actions in experiments. performs simple observations, uses basic methods of statistical and IT techniques and tools for the description of phenomena and analysis biological data	[SU1] wypowiedź ustna/rozmowa/diskusja [SU2] prezentacja/projekt/referat/raport [SU3] opracowanie tekstowe/praca pisemna [SU4] test/egzamin - ustny lub pisemny [SU5] realizacja zadania problemowego [SU6] demonstracja umiejętności praktycznych [SU8] obserwacja samodzielnej lub zespołowej pracy studenta

	Course outcome	Subject outcome	Method of verification
	[GBEL3_U04] Capable of reading scientific texts in English and Polish with comprehension, synthesizing the knowledge contained within them, preparing well-documented studies on biological issues, as well as those related to research commercialization.	can read and understand scientific texts in Polish and simple texts in English in the field of genetics; independently searches for and uses available sources of information, including electronic	[SU1] wypowiedź ustna/rozmowa/ dyskusja [SU2] prezentacja/projekt/referat/ raport [SU3] opracowanie tekstowe/ praca pisemna [SU4] test/egzamin - ustny lub pisemny [SU5] realizacja zadania problemowego [SU6] demonstracja umiejętności praktycznych [SU8] obserwacja samodzielnej lub zespołowej pracy studenta
Subject contents	Introduction to classical genetics: Mendel's first and second laws, analysis of pedigrees; allelic and non-allelic gene interaction; lethal genes, semilethal and subvital. Chromosomal theory of heredity: lineage coupling. Sex-linked, sex-influenced, and sex-limited inheritance. Inheritance of quantitative traits.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written or oral entrance tests	51.0%	10.0%
	final tests	51.0%	60.0%
	activity and participation in discussions	51.0%	5.0%
	experiment report	51.0%	25.0%
Recommended reading	Basic literature	Bal J. Molecular biology in medicine Elements of clinical genetics. PWN Warsaw, 2011. Boczowski K. Outline of medical genetics. PZWL Warsaw, 1990. Brooker R. (ed.) Genetics: Analysis and Principles, 6-th edition. Mc Graw Hill. 2017 Charon K. M., Świtoński M. Animal genetics. PWN Warsaw, 2006. Charon K. M., Świtoński M. Genetics and genomics of animals. PWN Warsaw, 2019 Krebs J.E., Goldstein E.S., Kilpatrick S.T. Lewin's GENES XII. Jones & Bartlett Learning; 12th Edition. 2017. Oniszczenko W., Dragan W.Ł. Genetics of behavior in psychology and psychiatry. Wydawnictwo Naukowe SCHOLAR, Warsaw, 2008. Piątkowska B., Goc A., Dąbrowska G. A collection of tasks and questions in genetics, vol. I General genetics. NCU Publishing House, Toruń 1998. Węgleński P.: Molecular genetics. PWN Warsaw, 2012.	

	Supplementary literature	Korf B. R. Human genetics. Solving medical problems. PWN Warsaw, 2003. Plomin R., Defries J.C., McClearn G.E., McGuffin P. Genetics of behavior. PWN Warsaw, 2001. Wysocka A., Lipowska M., Kilikowska A. 2010. Genetics in solving dyslexia puzzles: the overview. Acta Neuropsychologica, 8(4): 315-331. Wysocka A., Lipowska M. 2010. Genetic basis of the co-occurrence of ADHD and developmental dyslexia. Psychiatry and Clinical Psychology, 10 (3): 188-193
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. Explain the terms: gender-related and gender-conjugated traits. 2. The distance between gene A and B is 4 cM, and between genes B and C is 9 cM. Calculate what is the percentage chance of a double crossing-over occurring.	
Work placement	Not applicable	

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