University of Gdańsk

Subject card

Subject name and code	Genetics, PG_00196833		
Field of study	Biology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	3.0
Learning profile	academic	Assessment form	exam
Conducting unit	Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Anna Wysocka	
	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	41.0	75

Subject objectives

Familiarizing with the basic and current genetic issues

Broadening the knowledge/understanding of the laws of heredity and the genetic variation.

Providing knowledge on the gene function/interaction, understanding the relationship: genotype-phenotype

Developing the ability to analyse pedigrees and determine the probability of inheriting genes

Familiarizing with methods of analysing the population genetic structure and factors disturbing the population balance

Presentation of research methods and development of the ability to ask questions, make assessments, solve uncomplicated genetic problems

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLL3_U05] The graduate is able to synthesise data from a variety of sources and draw appropriate conclusions	synthesizes information about modern research methods in genetics and draws adequate conclusions on this basis	[SU1] oral statement/conversation/ discussion
[BIOLL3_W05] The graduate uderstands at an advanced level the rules and describe the mechanisms of life at the population, biocenosis and ecosystem levels and the temporal and spatial determinants of biodiversity	explains the basic rules and describes the mechanisms of genetic diversity at the population level and the temporal and spatial determinants of biodiversity	[SW4] test/exam - oral or written
[BIOLL3_W02] The graduate knows and uderstands at an advanced level the structure and properties of biological macromolecules, molecular mechanisms of basal metabolic pathways and the flow of genetic information, as well as the sources of variation in organisms; the rules of inheritance	knows and understands the mechanisms of genetic information flow and the sources of organisms variability, explains the rules of inheritance	[SW4] test/exam - oral or written
[BIOLL3_K04] The graduate is ready to take responsibility for his/ her own work and to follow the rules of teamwork and responsibility for shared tasks	is aware of the responsibility for their own work and readiness to comply with the rules of teamwork and take responsibility for jointly implemented tasks	[SK8] observation of student's independent or team work
[BIOLL3_U03] The graduate, under the guidance of a mentor, is able to carry out simple tasks or research expertise typical of the biological sciences	awareness of responsibility for one's own work and readiness to comply with the rules of teamwork and take responsibility for jointly implemented tasks	[SU1] oral statement/conversation/ discussion

Subject contents

Mendelian inheritance with examples in plants, animals and humans. Inheritance inconsistent with Mendel's rules. Basic properties genes (e.g. gene penetrance, trait expressivity, pleiotropy, modification, genetic anticipation). Multiple alleles. Gene interaction allelic and non-allelic. Lethal genes. Sex-linked, sex-influenced, and sex-limited inheritance. Genetic lineage. Methods of genetic mapping. Inheritance of quantitative traits. Multifactorial inheritance. Behavioural genetics. Issues of mutagenesis. Epigenetics. Genetic basis of ontogeny of multicellular organisms. Structure of genomes. Extranuclear inheritance in Eucaryota. Genetic structure of the population. Genetic equilibrium. Factors influencing allele frequency in populations.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
final test	51.0%	100.0%

Recommended reading

Basic literature

Bal J. Molecular biology in medicine Elements of clinical genetics. PWN Warsaw, 2011.Boczkowski K. Outline of medical genetics. PZWL Warsaw, 1990.Brooker R. (ed.) Genetics: Analysis and Principles, 6-th edition. Mc Graw Hill. 2017Charon K. M., Świtoński M. Animal genetics. PWN Warsaw, 2006.Charon K. M., Świtoński M. Genetics and genomics of animals. PWN Warsaw, 2019Krebs 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., Mc Cleam G.E., McGuffin P. Genetics of behavior. PWN Warszawa, 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. Point out the wrong sentence:a. in complete dominance, the dominant allele manifests itself phenotypically in heterozygote b. in incomplete dominance, the heterozygote manifests an intermediate trait value between the phenotypes of both homozygotes c. codominance is a type of allelic gene interactiond. in incomplete dominance, heterozygotes always manifest a dominant trait2. Karyotype 47, XYY is an example: a. monosomy c. euploidy b. polyploidy d. aneuploidy	
Work placement	Not applicable	

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