



Subject card

Subject name and code	General Genetics, PG_00037397						
Field of study	Biotechnology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	first-cycle 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		English		
Semester of study	2		ECTS credits		1.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Microbiology -> Faculty Of Chemistry -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Anna Stanisławska-Sachadyn				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15		1.0		9.0	25
Subject objectives	The objective of the lecture is to convey the key discoveries, principles and terms of genetics to the 1-st year students. The lecture comprises the essential questions of genetics: inheritance of diseases and other traits, the mechanisms of gene expression regulation and genetic variation. The lecture places emphasis on explaining the molecular aspects of genetic inheritance and variation. While presenting the fundamentals of genetics, the lecture comprises a selection of examples showing a variety of traits, variants, and mechanisms of gene expression regulation.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W04		Student knows the fundamental principles of inheritance, the structure and replication of prokaryotic and eukaryotic genomes, the origin and types of mutations and genetic polymorphisms. In addition, Student knows mechanisms of gene expression regulation in Prokaryotes and Eukaryotes, including multicellular organisms and epigenetic mechanisms.		[SW1] Assessment of factual knowledge		
	K6_U02		Student can apply the knowledge of the inheritance principles in biotechnology.		[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject		
	K6_W07		Student has knowledge about the theoretical foundations of general genetics		[SW1] Assessment of factual knowledge		

Subject contents	1.Genetyka przedmendlowska i odkrycia Grzegorza Mendla. 2.Thomas Hunt Morgan; chromosomy, geny sprzężone, rekombinacja DNA. 3.Dziedziczenie mendlowskie – cechy dominujące i recesywne. 4.Dziedziczenie niemendlowskie (kodominacja, epistaza) oraz cechy i choroby wielogenowe. 5.Odkrycie roli DNA jako materiału genetycznego, rozwiązanie struktury DNA i kodu genetycznego. 6.Genom prokariotyczny i jego replikacja. Plazmidy. 7.Genom eukariotyczny i jego replikacja. DNA mitochondriów i chloroplastów. 8.Powstawanie mutacji i naprawa DNA. 9.Rodzaje i skutki mutacji oraz polimorfizm genetyczny. 10.Transkrypcja i translacja. 11.Regulacja ekspresji genu – model prokariotyczny. 12.Epigenetyka. 13.Różnorodność eukariotycznych mechanizmów regulacji ekspresji genu. Regulacja ekspresji genów w organizmach wielokomórkowych – ekspresja tkankowo-specyficzna 14.Test		
Prerequisites and co-requisites	basics of biology at the secondary school level		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test score	60.0%	100.0%
Recommended reading	Basic literature	Lecture print-outs	
	Supplementary literature	Leland H. Hartwell, Leroy Hood, Michael L. Goldberg, Ann E. Reynolds, Lee M. Silver Genetics: From Genes to Genomes, 4/e, 2011	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1.Define the terms: homozygote, heterozygote, recessive and dominant traits, monohybrides and dihybrides. 2.Define allele, recessive and dominant allele 3.Mendel's experimental setup. 4. Explain the experiment confirming the law of segregation (the 1st Mendel's law). 5. Explain the experiment confirming the law of independent assortment (the 2nd Mendel's law). 6. Punnett's square 7. Apomixis in the context of Mendel's studies 8. Are Mendel's laws universal? 9.Mendelian traits in humans 10.Pedigree symbols.		
Work placement	Not applicable		

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