



Subject card

Subject name and code	General Genetics, PG_00037397						
Field of study	Biotechnology						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
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						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Anna Stanisławska-Sachadyn					
	Teachers	dr hab. inż. Anna Stanisławska-Sachadyn					
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 przedmendelowska i odkrycia Grzegorza Mendla. 2.Thomas Hunt Morgan; chromosomy, geny sprzężone, rekombinacja DNA. 3.Dziedziczenie mendelowskie – cechy dominujące i recesywne. 4.Dziedziczenie niemendelowskie (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.Epiggenetyka. 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 eNauczenie: General Genetics, I stopień Biotechnologia - Moodle ID: 24474 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=24474	
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		