GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Human Genetics, PG_00054759		
Field of study	Biotechnology		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	Optional subject group 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	3	Language of instruction	Polish no comments
Semester of study	6	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	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	15.0	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	2.0	18.0	50

Subject objectives

The objective of the lecture is to present the fundamental knowledge on human genome, the methods of human genome analysis, mutations and genetic polymorphism and the translational implications of human genome research.

The objective of the seminars is to broaden students knowledge in the field of human genetics through focusing on selected topics, acquainting students with the principles of searching, selecting, validating and presenting scientific information and the rules of scientific discussion.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U07	The student can use his skills in genetic engineering to clone and modify genes and the human genome.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
K6_W07	The student understands the principles and applications of molecular cloning and genome analysis techniques. The student understands the use of methods for molecular diagnostics.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation
K6_K05	The student knows the open possibilities thanks to human genome research but has a consciousness of threats related to new analysis and DNA modification technologies.	[SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice

Subject contents	LECTURE Structure of the human genome. Mitochondrial DNA DNA mutations types and causes. Inheritance and effects of genetic mutations. Epigenetics. Chromosomopathies. SEMINAR Chromosome structure and testing methods (cytogenetic methods, FISH, CGH) Cancer genetics Dropping atomic bombs on Hiroshima and Nagasaki and cancer incidence Hybridization microarrays in the study of gene expression Cystic fibrosis - frequency, course, etiopathogenesis Phenylketonuria - frequency, course, etiopathogenesis Huntington's disease - frequency, course, etiopathogenesis Gender determining genes Genetic disorders of sex determination Chemical compounds with genotoxic effects Stem and pluripotent cells Genetic variants influencing the course of cardiovascular diseases Genetic and environmental basis of diabetes Next-generation sequencing (NGS) in the study of genomes and transcriptomes Targeted therapy in cancer, genetic determinants Free circulating DNA in early oncological diagnosis
Prerequisites and co-requisites	The basics of genetics and molecular biology at the level of the 1st degree biotechnology studies at the Chemical Faculty TUG

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	seminars - speech (presentation)	60.0%	40.0%
	lecture - final test	60.0%	60.0%
Recommended reading	Basic literature	powerpoint slides print-outs	
	Supplementary literature	Research articles cited in the lecture Human Genetics: Concepts and Applications, Ricki Lewis, McGraw-Hill, 2005, 6-th edition Podstawy genetyki medycznej, Michael Connor i Malcolm Ferguson-Smith , 1998	
	eResources addresses	Adresy na platformie eNauczanie: GENETYKA CZŁOWIEKA, I STOPIEŃ - Moodle ID: 19315 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=19315	
Example issues/ example questions/ tasks being completed	The size of human genome and the number of chromosomes. Is human genome structure unique? The number of human genes, chromosomes. Retrotranspozons i pseudogenes. Is human genome identical in all issues of a single individual? How are monogenic diseases inherited? Polygenic inheritance. Can the disease be caused by an epigenetic mutation?		
Work placement	Not applicable		