GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	HUMAN GENETICS, PG_00063475		
Field of study	Biotechnology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	Optional subject group Specialty 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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Biotechnology and Microbiology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Paweł Sachadyn	
	Teachers		

Lesson types

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	5.0	15.0	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
[K7_K02] is aware of the potential risks and opportunities associated with the development of science and technology for the natural environment and society	The student knows the prospects opened by the study of the human genome but is aware of the risks associated with new technologies of DNA analysis and modification	[SK4] Assessment of communication skills, including language correctness [SK2] Assessment of progress of work
[K7_U05] proposes solutions to technological and scientific problems in biotechnology and related fields using experimental methods and bioinformatics, statistics and specialized databases	The student is able to use the knowledge of the human genome in the use and design of methods of genetic molecular diagnostics	[SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information
[K7_W01] defines the phenomena, processes and laws of living nature applied to the production of useful goods and the carrying out of services	The student has knowledge about the human genome, methods of its study, in particular, mutations and genetic polymorphism, and the possibility of practical use of knowledge about the human genome	[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge

Subject contents	Course content – lecture LECTURE Human genome structure and organizations. Mitochondrial DNA. DNA mutations: mutagens and types of. Mutation inheritance and mutation effects SEMINARS DNA testing in forensic medicine Epigenetic inheritance Genetic basis of immune resistance Genetics of cancer Nuclear power plant disasters in Chernobyl and Fukushima and cancer incidence Genes and brains Genetic basis of schizophrenia Eugenics Prenatal and preimplantation genetic diagnostics Genetic basis of cardiovascular diseases Genetic and environmental basis of diabetes Muscular dystrophies genetic basis, disease development and treatment options Genetic basis of longevity The genetics of obesity and the genetics of thinness The Neanderthal admixture Genetics of the Slavs? Genes and facial features Cloning animals and humans

	Gene therapy Pharmacological therapies for genetic diseases Pharmacogenetics Next-generation sequencing (NGS) in the study of genomes and transcriptomes
Prerequisites and co-requisites	The basics of genetics and molecular biology at the level of the 1st degree biotechnology studies at the Faculty of Chemistry GUT

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
lecture - final test	60.0%	60.0%
seminars - speech (presentation)	60.0%	40.0%

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 Essential Medical Genetics, Edward S. Tobias, Michael Connor, Malcolm Ferguson-Smith, John Wiley & Sons, Nov 15, 2011 Adopted at Cambridge University
eResources addresses	

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. Retrotranspozons i pseudogenes.. Is human genome identical in all issues of a single individual? Is it identical in monozygotic siblings? Human and chimp genome - the genetic basis of humanity. *The genomes of Homo sapiens* and *Homo neandertalis*.
Practical activites within the subject	Not applicable

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