University of Gdańsk

Subject card

Subject name and code	Genetics and Human Genetic Diseases, PG_00193545		
Field of study	Bioinformatics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
Education level	Bachelor's 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
Semester of study	6	ECTS credits	3.0
Learning profile	academic	Assessment form	credit
Conducting unit	Pracownia Molekularnych i Komórkowych Podstaw Strategii Nutr -> Department of Medical Biology and Genetics -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Marta Moskot	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	30.0	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	0.0	45.0	75

Subject objectives

Getting to know the human karyotype with particular emphasis on the location of genes whose mutations are associated with hereditary diseases, disorders of the pattern of inheritance of Mendelian traits, polygenic traits and epigenetic control of gene expression in molecular diagnostics to assess the risk of human genetically determined diseases, and with methods of studying the human genome in forensic medicine and forensics.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOINL3_U02] Graduate is able to apply knowledge of natural sciences and science to formulate, analyze and solve problems related to bioinformatics	Student understands current problems related to bioethics. She knows the legal, organizational and ethical conditions of conducting human genetic research. He analyzes knowledge in the field of genetics and is able to indicate its practical applications in human life.	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU3] text preparation/written work
[BIOINL3_K03] Has an awareness and understanding of the risks and dilemmas, including ethical dilemmas, involved in conducting scientific research and introducing advanced technologies; understands and appreciates the importance of intellectual property; acts ethically	Student is able to analyze scientific publications in the field of human genetics in terms of their use in formulating and solving problems related to bioinformatics. Can critically analyze information about human genetics from various available sources.	[SK1] oral statement/conversation/ discussion
[BIOINL3_W02] Has advanced scientific knowledge necessary to understand the basic processes in living organisms.	Student has in-depth knowledge of human genetics. Knows the molecular mechanisms of genetic information transfer and gene expression. Knows the genetic basis of human diseases.	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work

Subject contents	Getting to know the human karyotype with particular emphasis on the location of genes whose mutations are associated with hereditary diseases, disorders of the pattern of inheritance of Mendelian traits, polygenic traits and epigenetic control of gene expression in molecular diagnostics to assess the risk of human genetically determined diseases, and with methods of studying the human genome in forensic medicine and forensics.
Prerequisites and co-requisites	After completing compulsory subjects in the first three semesters, the student has the knowledge and skills that qualify him or her to participate in and pass the course.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Colloquium	51.0%	60.0%
Tasks	51.0%	40.0%

Recommended reading

Basic literature	Friedman J.M. Dill F.J. Hayden M.R. McGillivray B.C. Genetyka Urban and Partner, 2000
Supplementary literature	Bradley J.T. Johnson D.R. Pober B.R. Genetyka medyczna. Wydawnictwo Lekarskie PZWL, 2008
eResources addresses	

Example issues/ example questions/ tasks being completed	1. Structure of the human karyotype characteristics of successive chromosomes.2. Genetic polymorphism.3. Disorders of the pattern of inheritance of Mendelian traits.4. Polygenic inheritance.5. Epigenetic control of gene expression.6. Teratogenesis and mutagenesis.7. Classification of human genetic diseases.8. Overview of single-gene diseases - gene background, symptoms, treatment.9. The process of lyonization and disorders of this process diseases linked to the X chromosome.10. Degeneration of the Y chromosome and its consequences disorders associated with mutations of the Y4 chromosome.11. Mitochondrial diseases.12. Prenatal and pre-implantation diagnostics.13. Diagnostics of genetic diseases - the use of molecular methods in the diagnosis of genetically determined diseases.14. Molecular diagnostics in forensic medicine and forensic science.15. Genetic counseling.
Work placement	Not applicable

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