

Subject card

Subject name and code	Genetics with elements of genetic diseases, PG_00154676						
Field of study	Medical Biology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Master's 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		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Department of Medical Biology and Genetics -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Magdalena Gabig-Cimińska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	0.0	0.0	0.0	20
	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	20		3.0		27.0	50
Subject objectives	1. Introduction of new concepts in human genetics and genetic diseases. 2. Familiarization with molecular mechanisms responsible for the development of genetic diseases. 3. Study of modern and the latest methods of prevention, diagnosis, and treatment of genetically determined diseases.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOLMEDMU2_W01] has an in-depth knowledge of scientific fields and disciplines relevant to medical biology and the studied specialty and knows their main development trends	Has in-depth knowledge of human genetics and genetic diseases, and is familiar with their main developmental trends	[SW4] test/exam - oral or written
	[BIOLMEDMU2_W03] knows the structure and functions of the human body, biological causes of disorders, lesions and social dysfunctions, and methods of their evaluation using biochemical, molecular, parasitological or neurobiological methods	Understands the structure and functions of the human genome, the genetic causes of disorders and diseases, and the methods for assessing them using molecular techniques	[SW4] test/exam - oral or written
	[BIOLMEDMU2_K02] is ready to recognize the importance of knowledge in solving cognitive and practical problems and to seek expert advice when having difficulty solving a problem on his own	Recognizes the importance of knowledge in solving cognitive and practical problems in the field of human genetics and seeks expert opinions when encountering difficulties in solving a problem independently	[SK1] oral statement/conversation/discussion [SK4] test/exam - oral or written [SK8] observation of student's independent or team work
	[BIOLMEDMU2_K07] is ready to formulate opinions on various aspects of professional activities	Is prepared to formulate opinions on various aspects of human genetics	[SK1] oral statement/conversation/discussion [SK4] test/exam - oral or written [SK8] observation of student's independent or team work
	[BIOLMEDMU2_U08] can independently plan and implement his own lifelong learning and guide others in doing so	Independently plans and continues lifelong learning and inspires others to do the same	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written [SU8] observation of student's independent or team work
	[BIOLMEDMU2_W02] is oriented to the currently debated problems in medical biology and related disciplines	Is familiar with the currently debated issues concerning human genetic diseases	[SW4] test/exam - oral or written
Assessment methods and criteria	[BIOLMEDMU2_U01] can proficiently, but critically, use the scientific literature and databases necessary in the activities of medical biology and related disciplines	Is proficient in critically using scientific literature and genetic databases	[SU4] test/exam - oral or written
Subject contents	1. Fundamentals and the most advanced achievements in molecular genetics. 2. Innovative research on the genetic foundations of diseases and their latest implications. 3. Pioneering therapies for genetic diseases. 4. Artificial intelligence and bioinformatics in genetics and human genetic diseases. 5. Synthetic genetics as the future of molecular biology and genetic engineering. 6. Personalized medicine based on genetic profiles and global databases and data banks. 7. Interdisciplinary integration of genetics with other sciences for a comprehensive understanding of genetic diseases.		
Prerequisites and co-requisites	Basic knowledge of biochemistry, molecular biology, and genetics. Additionally, the student should have fundamental knowledge in pathophysiology, pathology, pharmacology, clinical chemistry, and laboratory diagnostics.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Subject Written exam (closed and open questions), covering lecture material, assessed according to the percentage indicator (UG Study Regulations)	51.0%	100.0%

Recommended reading	Basic literature	1. Jorde LB, Carey JC, Bamshad MJ, Genetyka medyczna, red. wyd. polskiego Maciej Borowiec, wydanie 6, Edra Urban&Partner, 2021. 2. Genetyka medyczna i molekularna, red. J. Bal, Warszawa, Wydawnictwo Naukowe PWN, 2017. 3. Tobias E. S., Connor M., Ferguson-Smith M., Genetyka medyczna, red. wyd. pol. A. Latos-Bielenska, Warszawa, PZWL Wydawnictwo Lekarskie, 2013. 4. Lucchesi JC. Epigenetyka. PWN, Warszawa, 2022. 5. Drewa G, Ferenc T. Genetyka medyczna, Wrocław, 2011.
	Supplementary literature	1. Fletcher H, Hickey I, Krotkie wykłady: Genetyka, PZWL 2021. 2. Weglenski P. Genetyka molekularna, wydanie VI, PWN, 2020. 3. Genetyka kliniczna nowotworow, red. J. Lubinski, Szczecin, Print Group, 2018. 4. Medycyna personalizowana, red. A. Fronczak, Warszawa, Oficyna Wydawnicza Warszawskiego Uniwersytetu Medycznego, 2016. 5. Brown T. A., Genomy, Warszawa, Wydawnictwo Naukowe PWN, 2019.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Genetic diseases are panethnic, which means that: A. they have a migratory nature; B. they relate only to a selected ethnic group; C. they occur worldwide, regardless of previously established divisions into nations, tribes, religions, and languages; D. they have a national character, meaning they are specific to certain cultural and historical groups. Complete: o The most common mitochondrial disease in children is considered to bewhile in adults it is	
Work placement	Not applicable	

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