

Subject card

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| Subject name and code | Genetics with elements of genetic diseases, PG_00203398 | | | | | | |
| Field of study | Medical Biology | | | | | | |
| Date of commencement of studies | October 2026 | Academic year of realisation of subject | | | 2026/2027 | | |
| 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. | | | | | | |

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| Learning outcomes | Course outcome | Subject outcome | Method of verification |
| | [BIOLMEDMU2_W03] has an in-depth understanding of 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_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_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 |
| [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 | <ol style="list-style-type: none"> 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 test (closed and open questions), covering lecture material, assessed according to the percentage indicator (UG Study Regulations) | 51.0% | 100.0% |
| Recommended reading | Basic literature | <ol style="list-style-type: none"> 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. Drewna G, Ferenc T. Genetyka medyczna, Wrocław, 2011. | |

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| | 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 | <p>Genetic diseases are panethnic, which means that:</p> <p>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.</p> <p>Complete: o The most common mitochondrial disease in children is considered to be,while in adults it is</p> | |
| Work placement | Not applicable | |

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