

Subject card

Subject name and code	Basic genetics, PG_00198278						
Field of study	Genetics and Experimental Biology						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2026/2027		
Education level	Bachelor'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	1	ECTS credits			1.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Department of Evolutionary Genetics and Biosystematics -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Anna Wysocka				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	20.0	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		1.0		4.0	25
Subject objectives	To familiarize students with the basic issues of genetics, in accordance with the current state of knowledge in this field. Deepening knowledge and understanding of the basic rules of heredity and the basis of genetic variation. To provide knowledge on the mechanisms of gene functioning and interaction, understanding the relationship between genotype and phenotype. Presentation of modern research methods and development of the ability to ask questions, make assessments and solve uncomplicated problems						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[GBEL3_W02] A graduate has an advanced knowledge and understanding of: knowledge of mathematics, physics and chemistry to the extent necessary for understanding biological phenomena and processes and their application in research methodology.	describes the mechanisms and sources of variability of organisms; explains the rules of inheritance	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report [SW3] text preparation/written work [SW5] implementation of a problem task
	[GBEL3_K01] The graduate is prepared to: use of theoretical knowledge in laboratory and production practice	is ready to put theoretical knowledge into practice laboratory to be complicit in the principles of teamwork and to be accountable for jointly implemented tasks	[SK8] observation of student's independent or team work
	[GBEL3_K05] The graduate is prepared to: responsibility for their own and others' safety at work	is responsible for the safety of their own work and that of others	[SK8] observation of student's independent or team work
	[GBEL3_K07] The graduate is prepared to: lifelong learning and updating of knowledge in molecular genetics and other fields.	knows the limitations of his/her own knowledge and understands the need for continuous learning and development in the field of genetics	[SK8] observation of student's independent or team work
	[GBEL3_U01] The graduate is able to: independently perform practical tasks in the biological and related sciences, formulate research problems, analyse their results and draw conclusions.	is able to independently perform simple research tasks in the field of genetics, formulate research problems, analyse their results and draw conclusions	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report [SU3] text preparation/written work [SU4] test/exam - oral or written [SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
	[GBEL3_U03] The graduate is able to: use research apparatus and tools and, following the correct sequence of operations, carry out simple physical, biological or chemical observations and measurements in laboratory work in the biological sciences.	preserves the correct sequence of actions in experiments. performs simple observations, uses basic methods of statistical and IT techniques and tools for the description of phenomena and analysis biological data	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report [SU3] text preparation/written work [SU4] test/exam - oral or written [SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
	[GBEL3_U04] The graduate is able to: read scientific texts in English and Polish with comprehension, synthesise the knowledge they contain, prepare well-documented papers on biological problems and on the commercialisation of research.	can read and understand scientific texts in Polish and simple texts in English in the field of genetics; independently searches for and uses available sources of information, including electronic	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report [SU3] text preparation/written work [SU4] test/exam - oral or written [SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
	[GBEL3_W03] A graduate has an advanced knowledge and understanding of: molecular mechanisms of genetic information transfer and gene expression and the molecular and genetic basis of human physiology and disease, including infectious diseases.	knows the genetic basis of disorders (traits) in animal and plant organisms	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion [SW2] presentation/project/paper/report [SW3] text preparation/written work [SW5] implementation of a problem task

	<table border="1"> <thead> <tr> <th>Course outcome</th> <th>Subject outcome</th> <th>Method of verification</th> </tr> </thead> <tbody> <tr> <td>[GBEL3_W05] A graduate has an advanced knowledge and understanding of: principles for planning research based on the achievements of biological sciences and related disciplines and the possibility of putting their results into practice, principles for the operation of equipment and apparatus used in molecular genetics research, and the principle of interpreting biological phenomena and processes based on empirical data in research work and practical action, taking into account the sustainable use of biodiversity.</td> <td>explains the theoretical basis of biological processes based on empirical data in researches and practical activities</td> <td>[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work [SW5] implementation of a problem task</td> </tr> </tbody> </table>	Course outcome	Subject outcome	Method of verification	[GBEL3_W05] A graduate has an advanced knowledge and understanding of: principles for planning research based on the achievements of biological sciences and related disciplines and the possibility of putting their results into practice, principles for the operation of equipment and apparatus used in molecular genetics research, and the principle of interpreting biological phenomena and processes based on empirical data in research work and practical action, taking into account the sustainable use of biodiversity.	explains the theoretical basis of biological processes based on empirical data in researches and practical activities	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work [SW5] implementation of a problem task									
Course outcome	Subject outcome	Method of verification														
[GBEL3_W05] A graduate has an advanced knowledge and understanding of: principles for planning research based on the achievements of biological sciences and related disciplines and the possibility of putting their results into practice, principles for the operation of equipment and apparatus used in molecular genetics research, and the principle of interpreting biological phenomena and processes based on empirical data in research work and practical action, taking into account the sustainable use of biodiversity.	explains the theoretical basis of biological processes based on empirical data in researches and practical activities	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work [SW5] implementation of a problem task														
Subject contents	Introduction to classical genetics: Mendel's first and second laws, analysis of pedigrees; allelic and non-allelic gene interaction; lethal genes, semilethal and subvital. Chromosomal theory of heredity: lineage coupling. Sex-linked, sex-influenced, and sex-limited inheritance. Inheritance of quantitative traits.															
Prerequisites and co-requisites																
Assessment methods and criteria	<table border="1"> <thead> <tr> <th>Subject passing criteria</th> <th>Passing threshold</th> <th>Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>experiment report</td> <td>51.0%</td> <td>25.0%</td> </tr> <tr> <td>written or oral entrance tests</td> <td>51.0%</td> <td>10.0%</td> </tr> <tr> <td>final tests</td> <td>51.0%</td> <td>60.0%</td> </tr> <tr> <td>activity and participation in discussions</td> <td>51.0%</td> <td>5.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	experiment report	51.0%	25.0%	written or oral entrance tests	51.0%	10.0%	final tests	51.0%	60.0%	activity and participation in discussions	51.0%	5.0%
Subject passing criteria	Passing threshold	Percentage of the final grade														
experiment report	51.0%	25.0%														
written or oral entrance tests	51.0%	10.0%														
final tests	51.0%	60.0%														
activity and participation in discussions	51.0%	5.0%														
Recommended reading	<p>Basic literature</p> <p>Bal J. Molecular biology in medicine Elements of clinical genetics. PWN Warsaw, 2011.</p> <p>Boczkowski K. Outline of medical genetics. PZWL Warsaw, 1990.</p> <p>Brooker R. (ed.) Genetics: Analysis and Principles, 6-th edition. Mc Graw Hill. 2017</p> <p>Charon K. M., Świtoński M. Animal genetics. PWN Warsaw, 2006.</p> <p>Charon K. M., Świtoński M. Genetics and genomics of animals. PWN Warsaw, 2019</p> <p>Krebs J.E., Goldstein E.S., Kilpatrick S.T. Lewin's GENES XII. Jones & Bartlett Learning; 12th Edition. 2017. Oniszczenko W., Dragan W.Ł. Genetics of behavior in psychology and psychiatry. Wydawnictwo Naukowe SCHOLAR, Warsaw, 2008.</p> <p>Piątkowska B., Goc A., Dąbrowska G. A collection of tasks and questions in genetics, vol. I General genetics. NCU Publishing House, Toruń 1998.</p> <p>Węgleński P.: Molecular genetics. PWN Warsaw, 2012.</p>															

	Supplementary literature	Korf B. R. Human genetics. Solving medical problems. PWN Warsaw, 2003. Plomin R., Defries J.C., McClearn G.E., McGuffin P. Genetics of behavior. PWN Warsaw, 2001. Wysocka A., Lipowska M., Kilikowska A. 2010. Genetics in solving dyslexia puzzles: the overview. Acta Neuropsychologica, 8(4): 315-331. Wysocka A., Lipowska M. 2010. Genetic basis of the co-occurrence of ADHD and developmental dyslexia. Psychiatry and Clinical Psychology, 10 (3): 188-193
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>1. Explain the terms: gender-related and gender-conjugated traits.</p> <p>2. The distance between gene A and B is 4 cM, and between genes B and C is 9 cM. Calculate what is the percentage chance of a double crossing-over occurring.</p>	
Work placement	Not applicable	

Document generated electronically. Does not require a seal or signature.