University of Gdańsk

Subject card

Subject name and code	Basic genetics, PG_00146876		
Field of study	Genetics and Experimental Biology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	undergraduate studies	Subject group	Obligatory subject group 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 polish
Semester of study	1	ECTS credits	1.0
Learning profile	academic	Assessment form	
Conducting unit	Katedra Genetyki Ewolucyjnej i Biosystematyki -> Faculty of Biology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Anna Wysocka	
	Teachers	dr hab. Anna Wysocka	

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_U04] Capable of reading scientific texts in English and Polish with comprehension, synthesizing the knowledge contained within them, preparing well-documented studies on biological issues, as well as those related to research commercialization.	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_U03] Proficient in using research equipment and tools, while following the correct sequence of procedures, to conduct basic physical, biological, or chemical observations and measurements in laboratory work within the field of 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_K01] The utilization 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_U01] Independently perform practical tasks in the field of biological sciences and related disciplines, formulate research problems, analyze 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_W05] the principles of research planning based on achievements in biological sciences and related fields, the potential application of their results in practice, the principles of 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 and practical activities, with consideration for sustainable use of biological diversity.	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
[GBEL3_W02] Knowledge of mathematics, physics, and chemistry is necessary for understanding biological phenomena and processes, as well as 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_W03] The molecular mechanisms of genetic information transmission and gene expression, as well as the molecular and genetic basis of human physiology and diseases, 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
[GBEL3_K07] Lifelong learning and updating knowledge in the field of molecular genetics and other disciplines.	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_K05] Responsibility for the safety of one's own work and others.	is responsible for the safety of their own work and that of others	[SK8] observation of student's independent or team work

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

Subject passing criteria	Passing threshold	Percentage of the final grade
experiment report	51.0%	25.0%
activity and participation in discussions	51.0%	5.0%
final tests	51.0%	60.0%
written or oral entrance tests	51.0%	10.0%

Recommended reading

Basic literature	Bal J. Molecular biology in medicine Elements of clinical genetics. PWN Warsaw, 2011. Boczkowski K. Outline of medical genetics. PZWL Warsaw, 1990. Brooker R. (ed.) Genetics: Analysis and Principles, 6-th edition. Mc Graw Hill. 2017 Charon K. M., Świtoński M. Animal genetics. PWN Warsaw, 2006. Charon K. M., Świtoński M. Genetics and genomics of animals. PWN Warsaw, 2019 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. Piątkowska B., Goc A., Dąbrowska G. A collection of tasks and questions in genetics, vol. I General genetics. NCU Publishing House, Toruń 1998. Węgleński P.: Molecular genetics. PWN Warsaw, 2012.
Supplementary literature	Korf B. R. Human genetics. Solving medical problems. PWN Warsaw, 2003.Plomin R., Defries J.C., Mc Cleam G.E., McGuffin P. Genetics of behavior. PWN Warsaw, 2001Wysocka A., Lipowska M., Kilikowska A. 2010. Genetics in solving dyslexia puzzles: the overview. Acta Neuropsychologica, 8(4): 315-331Wysocka 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	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	1. Explain the terms: gender-related and gender-conjugated traits. 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.
Work placement	Not applicable

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