University of Gdańsk

Subject card

Subject name and code	Statistics with elements of mathematics in biological sciences, PG_00198279		
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
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	2.0
Learning profile	academic	Assessment form	credit
Conducting unit	Laboratory of Plant Physiology and Toxicology -> Department of Experimental Biology and Plant Biotechnology -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Agnieszka Baścik-Remisiewicz	
	Teachers		

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	30.0	0.0	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	10.0	10.0	50

Subject objectives	
	1. To prepare students to use basic methods of statistical analysis and to apply them in the interpretation of biological phenomena and processes. 2. To acquaint students with the tools of mathematics necessary to understand the laws of nature and to describe life processes.

Learning outcomes

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.	The graduate has knowledge of the principles of planning research based on the achievements of biological sciences and related fields and the possibility of using the results in practice, the graduate knows the principle of interpreting biological phenomena and processes based on empirical data in research work and practical activities.	[SW4] test/exam - oral or written [SW5] implementation of a problem task
[GBEL3_K07] The graduate is prepared to: lifelong learning and updating of knowledge in molecular genetics and other fields.	The graduate understands the need for lifelong learning and updating their knowledge of molecular genetics, statistics and mathematics and related disciplines.	[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.	The graduate is able to independently perform practical tasks in the field of statistics and mathematics, formulate research problems, analyse their results and draw conclusions.	[SU4] test/exam - oral or written [SU5] implementation of a problem task [SU8] observation of student's independent or team work
[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.	The graduate has the knowledge of mathematics to the extent necessary to understand biological phenomena and processes and their application in research methodology.	[SW4] test/exam - oral or written [SW5] implementation of a problem task

Subject contents

Examples of practical application of selected statistical and mathematical methods covered in the lecture topics.

Statistics: Basic concepts of statistics (types of variables, rules for approximating number). Descriptive statistics: sample size, arithmetic mean, variance, standard deviation, standard error. Binomial and normal distributions. Statistical hypothesis testing. Homogeneity of variance (Snedecor's F test). Student's t-test. One-way analysis of variance.

Mathematics: Introduction to the calculus of probability. Number sequences. Derivative of a function and its application. Integral calculus of functions of one variable: the indeterminate and determinate integral, methods of calculating integrals and their application.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
mathematics exam	51.0%	40.0%
statistics exam	51.0%	60.0%

Recommended reading

Basic literature	Baścik-Remisiewicz A., Chincinska I., Miklaszewska M. 2020. Wybrane zagadnienia ze statystyki i matematyki. Przewodnik do ćwiczeń dla studentów biologii. Wydawnictwo Uniwersytetu Gdańskiego Łomnicki A. 2014. (lub wydania wcześniejsze). Wprowadzenie do statystyki dla przyrodników. PWN, Warszawa. Krysicki W., Włodarski L. 2015. (lub wydania wcześniejsze). Analiza matematyczna w zadaniach. Część I i II. PWN, Warszawa.
Supplementary literature	Wrzosek D. 2010. (lub wydania wcześniejsze). Matematyka dla biologów. Wydawnictwo Uniwersytetu Warszawskiego.
eResources addresses	

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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