

Nazwa zajęć/ <i>Course title:</i>	<b>Statystyka</b>	<b>ECTS</b>	<b>3</b>
Nazwa zajęć w j. angielskim/ <i>Course title in English:</i>	<b>Statistics</b>		
Zajęcia dla kierunku studiów/ <i>Degree program name:</i>	Biotechnology		

Język kursu/ <i>Course language:</i>	English	Poziom studiów/ <i>Study level:</i> I		
Typ studiów/ <i>Form of studies:</i>	X intramural .. extramural	Status zajęć/ <i>Course status</i>	X podstawowe/ <i>Basic</i> kierunkowe/ <i>major</i>	X obowiązkowe/ <i>mandatory</i> .. do wyboru/ <i>elective</i>
		Semestr/ <i>Semester:</i> 6	X semestr zimowy/ <i>winter semester</i> semestr letni/ <i>summer semester</i>	
Rok akademicki/ <i>Academic year:</i>		<b>2022/2023</b>	Numer katalogowy/ <i>Catalogue number:</i>	<b>BBT_BTa-1S-6L-44</b>

Koordinator zajęć/ <i>Course coordinator:</i>	<b>dr Szymon Bijak</b>			
Prowadzący zajęcia/ <i>Teachers responsible for the course:</i>	dr Szymon Bijak			
Założenia, cele i opis zajęć/ <i>Aims, objectives and description of the course:</i>	<p>The aim of the course is to familiarize the student with the basic sections of mathematical statistics and their practical use in the field of biotechnology, and to enable them to master the basic tools for making analyzes useful in the performance and writing of an engineering thesis.</p> <p>The student learns the basic concepts of mathematical statistics and the individual stages of statistical research. Descriptive statistics (distribution series, data presentation, individual statistical measures) and the basics of the theory of probability (random events, random variable, theoretical distributions of a random variable), basics of statistical inference (point and interval estimation) and testing of statistical hypotheses (assumptions of the hypothesis verification theory) are presented. , parametric and non-parametric hypotheses, errors, selected statistical tests), basics of regression and correlation analysis (types of dependence, correlation coefficient).</p> <p>The student obtains the skills to calculate basic statistical measures, perform a graphical presentation of data and results, take random samples and determine their parameters, determine the values of standard and mean errors, build confidence intervals for the mean or mean difference, and test the significance of the difference between means and between variances and testing the compatibility of empirical and theoretical distributions. Linear regression equations are also determined, as well as the calculated correlation and determination coefficients. The student obtains the above skills using generally available statistical programs.</p>			
Formy dydaktyczne, liczba godzin/ <i>Teaching forms, number of hours:</i>	a) laboratory classes number of hours 30			
Metody dydaktyczne/ <i>Teaching methods:</i>	solving tasks and problems, consultations, the possibility of using distance learning when necessary			
Wymagania formalne i założenia wstępne/ <i>Formal requirements and prerequisites</i>	Basics of computer science, basics of mathematics The student uses a spreadsheet.			
Efekty uczenia się/ <i>Learning outcomes:</i>	treść efektu przypisanego do zajęć/ <i>the content of the effect assigned to the course:</i>		Odniesienie do efektu kierunkowego <i>/Relation to the course outcomes</i>	Siła dla ef. kier* <i>/Impact on the course outcomes*</i>
Wiedza (absolwent zna i rozumie) <i>/Knowledge: (the graduate knows and understands)</i>	W1	has knowledge of the basic distributions of random variables; can estimate the parameters of the distribution	K_W04 K_W07 K_W12	3 3 3
	W2	understands the need for statistical inference about the population based on the sample results	K_W04 K_W07 K_W12 K_W13	3 3 3 3
Umiejętności (absolwent potrafi) <i>/Skills: (the graduate is able to)</i>	U1	is able to choose the appropriate method for statistical data analysis	K_U02 K_U04 K_U07	2 3 3
	U2	performs basic statistical analyzes	K_U21	3
	U3	can describe the performed statistical analyzes and draw conclusions	K_U21	3

Kompetencje (absolwent jest gotów do) /Competences: (The graduate is ready to)	K1	applies the known statistical methods in practice	K_K02	2
<i>Treści programowe zapewniające uzyskanie efektów uczenia się:</i>  <i>/Program contents ensuring the achievement of the learning outcomes:</i>		Familiarizing the student with the basic divisions of mathematical statistics and their practical use in the field of biotechnology, and enabling the student to master the basic tools for making analyzes useful in the performance and writing of an engineering thesis. Issues such as: descriptive statistics (distribution series, data presentation, individual statistical measures) and the basics of the theory of probability (random events, random variable, theoretical distributions of a random variable), basics of statistical inference (point and interval estimation) and testing statistical hypotheses (assumptions of the theory verification of hypotheses, parametric and non-parametric hypotheses, errors, selected statistical tests), basics of regression and correlation analysis (types of dependence, correlation coefficient).		
Sposób weryfikacji efektów uczenia się/ <i>Methods of the verification of the learning outcomes:</i>		final test, activity during classes,		
Szczegóły dotyczące sposobów weryfikacji i form dokumentacji osiągniętych efektów uczenia się <i>/Details on the verification methods and of the ways of documenting the learning outcomes:</i>		Tasks performed during the exercises, a set of questions from the final test		
Elementy i wagi mające wpływ na ocenę końcową/ <i>Elements and weights influencing the final grade:</i>		Assessment of the final test (100%)		
Miejsce realizacji zajęć/ <i>Teaching place:</i>		computer lab		
Literature / <i>Literature:</i> Primary: 1. R. Kala, Statistics for naturalists. AR Publishing House in Poznań 2002. 2. J. Kisielińska, U. Skórnik-Pokarowska. Fundamentals of Statistics with Excel, SGGW Publishing House, 2005 3. W. Krywicki, J. Bartos, W. Dyczka, K. Królikowska, M. Wasilewski, Probability calculus and mathematical statistics in tasks. Th. 1 and 2. PWN 2007. 4. A. Łomnicki, Introduction to Statistics for Naturalists. PWN 2010. 5. W. Olech, M. Wieczorek, Application of statistical methods in animal husbandry experiments. SGGW Publishing House, 2002. 6. M. Parlińska, J. Parliński, Statistical research with Excel. SGGW Publishing House, 2003. Complementary: Online resources, especially tutorial videos on the YouTube platform				
UWAGI/ANNOTATIONS The following scale is used to calculate the final score: 100-91% points - 5.0; 90-81% points - 4.5, 80-71% points - 4.0; 70-61% points - 3.5; 60-51% points - 3.0				

\*) 3 – zaawansowany i szczegółowy, 2 – znaczący, 1 – podstawowy/ 3 – significant and detailed, 2 – considerable, 1 – basic,

Wskaźniki ilościowe charakteryzujące moduł/przedmiot/*Quantitative summary of the course:*

Szacunkowa sumaryczna liczba godzin pracy studenta (kontaktowych i pracy własnej) niezbędna dla osiągnięcia zakładanych dla zajęć efektów uczenia się - na tej podstawie należy wypełnić pole ECTS / <i>Estimated number of work hours per student (contact and self-study) essential to achieve the presumed learning outcomes - basis for the calculation of ECTS credits:</i>	55 h
Łączna liczba punktów ECTS, którą student uzyskuje na zajęciach wymagających bezpośredniego udziału nauczycieli akademickich lub innych osób prowadzących zajęcia/ <i>Total number of ECTS credits accumulated by the student during contact learning:</i>	1.2 ECTS