Title:	***The basics of statistics***
Number of hours:	15
Study period: (summer/winter)	Winter / academic year 2021/2022
Number of credits:	3
Assessment methods:	Participation in all classes (working with the STATISTICA package) Completing academic assignments (conducting data analyses and preparing their interpretation) A short multiple-choice test
Language of instruction:	English
Prerequisites:	Basic English language skills and interest in statistics
Course content:	1. Introduction - Does statistics lie? The critical review of examples. 2. The basic statistical terms: dependent and independent variables, dependent and independent data, population, sample, parameter, estimator, the levels of measurement (nominal, ordinal, interval, ratio), the probability level, relationship/correlation, parametric and nonparametric tests. 3. Using the STATISTICA package: data management (data coding, setting up and organizing data sets, sampling large sets) 4. Descriptive statistics: data presentation, frequency tables, the measures of central tendency (mean, median, mode), the measures of dispersion, (range, coefficient of variation, variance, standard deviation) asymmetry and concentration (skewness and kurtosis), testing a normal distribution 5. Measures of bivariate correlation (Pearson's and Spearman's coefficients) and chi-square test with effect size measures (ϕ, V Cramer and C contingency) 6. Inductive statistics: tests of the significance of parameter differences (for independent data), the rules for choosing correct tests (chi-square test, Mann-Whitney U test, t-test, Kruskal-Wallis test). Conducting analyses with the above

	tests using the STATISTICA package.
Learning outcomes:	Students will have acquired basic knowledge of statistical terminology and assumptions concerning data analysis (the levels of measurement, the normal distribution, the homogeneity of variance). Students will know methods of analysing the relationships between two variables (chi-square test, Spearman's rank correlation coefficient, Pearson's correlation coefficient) and they will be able to apply them. They will be able to use tests of difference for independent data (t-test, U Mann-Whitney test, ANOVA and Kruskal-Wallis test).They will have developed the ability of understanding research results presented in scientific articles and preparing statistical interpretation of the data. Life-driven examples will allow them to transfer their knowledge to practical skills.
Name of lecturer:	Michalina Sołtys, PhD
Contact (email address):	michalina.soltys@ukw.edu.pl
Literature:	- Hart, A. (2001). Mann-Whitney test is not just a test of medians: differences in spread can be important. *BMJ, 323(7309), 391-393.* doi:10.1136/bmj.323.7309.391 - McHugh, M. L. (2013). The Chi-square test of independence*. Biochemia Medica, 143–149.* doi:10.11613/bm.2013.018 - Masserli, F.H.(2012). Chocolate consumption, cognitive function, and Nobel Laureates. *The New England Journal of Medicine 367*(16), 1562-1564, doi:10.1056/nejmon1211064 -Marusteri, M.& Bacarea, V.(2010). Comparing groups for statistical differences: how to choose the right statistical test? *Biochemia medica, 20*(1), 15-32. - Meltzoff, J. & Cooper, H. (2018). *Critical Thinking. About Research. Psychology and Related Fields (2nd edition).* Washington, DC: American Psychological Association. - Rowntree D. (1991). *Statistics without tears: a primer for no-mathematicians.* London: Panguen Books. - Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation Coefficients. *Anesthesia & Analgesia, 126(5), 1763–1768.* doi:10.1213/ane.0000000000002864 On-line resources and multimedia materials

Projekt realizowany jest w ramach dofinansowania ze środków Unii Europejskiej w ramach Programu Operacyjnego Wiedza Edukacja Rozwój 2014-2020.