Prowadzący	Anna Tatarczak
Oferta PJO*	TAK / NIE**
Oferta PJOE*	TAK / NIE**
Kierunek, rok, stopień dla PJO	
Semestr roku 2021/2022	zimowy / letni**

* PJO – przedmiot w języku obcym dla studentów polskich / PJOE – przedmiot w języku obcym dla studentów Erasmus+

** zostawić właściwe

BASIC INFORMATION ABOUT THE SUBJECT (INDEPENDENT OF THE CYCLE)

Module name	**Introduction to data analysis using Excel**
Erasmus code	
ISCED code	
Language of instruction	
Website	https://www.umcs.pl/en/courses-in-english,21103.htm (dla PJOE)
Prerequisites	Requirements in the area of: - knowledge: shows acquaintance of problems and methods of algebra, mathematical analysis, descriptive statistics, probability theory, mathematical statistics and basics of macroeconomics, microeconomics and finance - skills: can perform basic mathematical operations, calculate chosen statistical measures - competences (attitude): can individually use bibliography as well as prepare information on a selected topic
ECTS points hour equivalents	Contact hours (work with an academic teacher) Total number of hours with an academic teacher: **15h** Number of ECTS points with an academic teacher: 1ECTS Non-contact hours (students' own work) Total number of non-contact hours: 30h Number of ECTS points for non-contact hours: 2 ECTS Total number of ECTS points for the module: **3 ECTS**
Educational outcomes verification methods	Essay, paper, classroom activities, classroom discussion.
Description	The use of Excel is widespread in the industry. It is a very powerful data analysis tool and almost all big and small businesses use Excel in their day to day functioning. This is an introductory course in the use of Excel and is designed to give you a working knowledge of Excel with the aim of getting to use it for more advance topics in Business Statistics later. The course is designed keeping in mind two kinds of learners - those who have very little functional knowledge of Excel and those who use Excel regularly but at a peripheral level and wish to enhance their skills. The course takes you from basic operations such as reading data into excel using various data formats, organizing and manipulating data, to some of the more advanced functionality of Excel. All along, Excel functionality is introduced using easy to understand examples which are demonstrated in a way that learners can become comfortable in understanding and applying them.
Reading list	Any good book in statistics should be useful. Our main reference will be 1. Black, K. (2009). *Business statistics: Contemporary decision making*. John Wiley & Sons.

	Winston, W. (2016). *Microsoft Excel data analysis and business modeling*. Microsoft press
Educational outcomes	

Lecture title	Learning objectives
Organizing and graphing data	The overall objective of the lecture is for student to master several techniques for summarizing and depicting data, thereby enabling to: **1.** Construct a frequency distribution from a set of data. **2.** Construct different types of quantitative data graphs, including histograms, frequency polygons, ogives, dot plots, in order to interpret the data being graphed. **3.** Construct different types of qualitative data graphs, including pie charts, bar graphs, and Pareto charts, in order to interpret the data being graphed. **4.** Recognize basic trends in two-variable scatter plots of numerical data.
Numerical descriptive measures	The focus of the lecture is the use of statistical techniques to describe data, thereby enabling to: **1.** Apply various measures of central tendency—including the mean, median, and mode—to a set of ungrouped data. **2.** Apply various measures of variability—including the range, interquartile range, mean absolute deviation, variance, and standard deviation —to a set of ungrouped data. **3.** Compute the mean, median, mode, standard deviation, and variance of grouped data. **4.** Describe a data distribution statistically and graphically using skewness, kurtosis, and box-and-whisker plots. **5.** Use computer packages to compute various measures of central tendency, variation, and shape on a set of data, as well as to describe the data distribution graphically.
Simple linear regression	The overall objective of this lecture is to give you an understanding of bivariate linear regression analysis, thereby enabling you to: **1.** Calculate the Pearson product-moment correlation coefficient to determine if there is a correlation between two variables. **2.** Explain what regression analysis is and the concepts of independent and dependent variable. **3.** Calculate the slope and y-intercept of the least squares equation of a regression line and from those, determine the equation of the regression line. **4.** Calculate the residuals of a regression line and from those determine the fit of the model, locate outliers, and test the assumptions of the regression model. **5.** Calculate the standard error of the estimate using the sum of squares of error, and use the standard error of the estimate to determine the fit of the model. **6.** Calculate the coefficient of determination to measure the fit for regression models, and relate it to the coefficient of correlation.

			7. Use the t and F tests to test hypotheses for both the slope of the regression model and the overall regression model. **8.** Calculate confidence intervals to estimate the conditional mean of the dependent variable and prediction intervals to estimate a single value of the dependent variable. **9.** Determine the equation of the trend line to forecast outcomes for time periods in the future, using alternate coding for time periods if necessary. **10.** Use a computer to develop a regression analysis, and interpret the output that is associated with it.
Practice	n/a		

INFORMATION ABOUT CLASSES IN THE CYCLE

Website	https://www.umcs.pl/en/courses-in-english,21103.htm (dla PJOE)
Educational outcomes verification methods	Essay, paper, classroom activities, classroom discussion.
Comments	
Reading list	Any good book in statistics should be useful. Our main reference will be 1. Black, K. (2009). *Business statistics: Contemporary decision making*. John Wiley & Sons. Winston, W. (2016). *Microsoft Excel data analysis and business modeling*. Microsoft press.
Educational outcomes	KNOWLEDGE 1. SKILLS 1. ATTITUDES 1.
A list of topics	Course Content: 1. Organizing and graphing data a. Raw data b. Organizing and graphing qualitative data c. Organizing and graphing quantitative data d. Shapes of histograms 2. Numerical descriptive measures a. Measures of central tendency for ungrouped data b. Measures of dispersion for ungrouped data c. Mean, variance, and standard deviation for grouped data d. Measures of position 3. Simple linear regression a. Simple linear regression model b. Simple linear regression analysis c. Standard deviation of random errors d. Coefficient of determination Linear correlation
Teaching methods	Lectures including multimodal presentations, Case studies, Work in computer laboratories
Assessment methods	1. **General requirements:** Students are requested to complete required readings and prepare for lectures before attending. Three hours of outside self-study is recommended for each hour of class and counseling time. 2. **Lecture attendance:** Students have to arrive on time to class, stay the entirety of the class and keep absences to a minimum. I expect to be informed beforehand if you need to miss a class. To encourage this policy, a student who is not present in class more than one time will not be

grade for course based on “collection of the points” but based on final exam.

3. **Counseling:** Individual or small group volunteer access to the lecture. It is the responsibility of the student to seek help and ask questions when concepts presented in lecture or the textbook are not clear. However, if the student encounters the decline in scores, a counseling meeting may be initiated by the lecturer.

4. **Exams:** A series of short exercises are required to make up the total course grade – only for the students who attended the classes (one absence is acceptable). These exercises would be available for students during the whole course: lecture and e-learning module. Student collects the points which will be given for solving exercises, and at the end of course an appropriate grade would be given. Grades for course are setup according to the following scale:

Points	Grade
Below 50	2.0 / F (Fail)
50 - 60	3.0 / E (Sufficient)
61 - 70	3.5 / D (Satisfactory)
71 - 80	4.0 / C (Good)
81 - 90	4.5 / B (Very good)
91 - 100	5/ A (Excellent)

Students who fail to collect a sufficient number of points or for those who has more than one absence, can attempt one time to pass that exam (counseling meetings), however there will be no “makeup” of exams if students receive grade 3.0 / E (Sufficient) or higher. Cheating is not acceptable in any form. Any evidence of cheating in exams will lead to annulling the grade and disciplinary procedure. Exams may include material from all reading assignments, all lectures, and all assignments. Grades for exam are setup according to the following scale:

%	Grade
Below 50	2.0 / F (Fail)

50 - 60	3.0 / E (Sufficient)
61 - 70	3.5 / D (Satisfactory)
71 - 80	4.0 / C (Good)
81 - 90	4.5 / B (Very good)
91 - 100	5.0 / A (Excellent)

Student who gets 2.0 (Fail) as finale course grade can attempt two times to pass the extra final exam, but there will be no makeup of that exam if student receive grade 3.0 (Sufficient) or higher.

If student is not present for an exam, the missed grade will be dropped from the averaging process. If student miss in excess of one exam, a grade of 2.0 will be recorded for the second missed exam and averaged into the final grade.

5. **Course changes:** This course syllabus provides a general plan for the course. The instructor reserves the right to make changes to the syllabus; including: assignments (projects), timetable, and examinations, etc., in order to accommodate the needs of the class as a whole and fulfill the goals and objectives of the course. If changes are necessitated during the term of the course, the instructor will immediately notify students of such changes by e-mail communication and/or announcement in class.