COURSE GUIDE

Course title	**Statistics**
Specialization	**Management**
Form of study	**Full-time studies**
Qualification level	**Second-degree studies**
Year	**1**
Semester	**II**
Unit running the program	**Department of Statistics and Econometrics**
Author	**dr Sylwia Nieszporska**
Profile	**General academic**
Number of ECTS credits	**3**

COURSE TYPE – NUMBER OF SEMESTER HOURS

LECTURE	CLASSES	LABORATORY	PROJECT	SEMINAR
15	**15**	**-**	**-**	**-**

COURSE DESCRIPTION

COURSE OBJECTIVE

O1. To acquaint students with the theoretical foundations of statistical measures that are used to describe the structure of the population, the analysis of the dynamics of the phenomena and to analyse the interdependence of socio–economic phenomena, and to educate students on using these measures.
O2. To educate students for the ability of using, self–interpretation and verification of the results of empirical calculations connected with the analysis of the structure of the general population, the analysis of dynamic and analysis of the interdependence of the socio–economic phenomena.

INITIAL REQUIREMENTS FOR THE KNOWLEDGE, ABILITIES AND OTHER COMPETENCES

A student should know the basics of mathematical analysis.
A student should identify and understand the basic terms in the field of socio–economic sciences.
A Student should plan the computational procedures and use their new skills to work with different computational packages.
A student should be able to organize their own work with the principles of logical inference.

THE EFFECTS OF LEARNING

EU 1 – A student is able to use statistical measures to describe the structure of the phenomenon, to analyze the interdependence of socio–economic phenomenon, to evaluate dynamic phenomena.
EU 2 – A student is able to estimate the basic parameters of the distribution of the general population and statistically verify the selected hypotheses concerning the basic parameters of the distribution of the general population.
EU 3 – A student can interpret statistical measures she/he knows.
EU 4 – A student demonstrates competence in combining active and creative knowledge in statistics and economics, in particular is able to use known statistical tools to perform the analysis of the production process in the company and to assist in the decision making process.

COURSE CONTENT

Form of teaching – LECTURE 15 hours	Number of hours
L1 The goal of statistics, basics definitions	**1**
L2 The structure of a population – measures of a central tendency, variability – using known statistical tools to perform the analysis of the production process.	**2**
L3 Correlation and regression in production process and decision-making process – a regression function, Pearson's product-moment coefficient of correlation, Spearman's	**2**

coefficient of rank correlation.	
L4 Correlation between unmeasurable variables – chi-squared statistics.	**1**
L5 Theory of a probability – discrete and continuous random variable, parameters of the distributions	**2**
L6 Estimation – sampling, distribution of the sample mean and the sample variance. Central limit theorem. Confidence intervals.	**2**
L7 Hypothesis testing – critical values, and tests for a mean and a variance	**2**
L8 Decomposition of the time series – the linear trend and the seasonal fluctuations.	**2**
L9 Indexes in socio-economics phenomena.	**1**
Form of teaching – CLASSES 15 hours	**Number of hours**
C1 Measures of a central tendency and variability	**2**
C2 Analysis of a structure of the population with using specialized software packages.	**1**
C3 A regression function, Pearson's product–moment coefficient of correlation, Spearman's coefficient of rank correlation.	**2**
C4 Correlation between socio-economics unmeasurable variables.	**2**
C5 The test	**1**
C6 Confidence intervals for a mean and a standard deviation.	**2**
C7 Hypothesis tests for a mean and a standard deviation	**2**
C8 The linear trend and the seasonal and accidental fluctuations.	**1**
C9 The absolute and relative changes, indexes.	**1**
C10 The test	**1**

TEACHNING TOOLS
Blackboard, chalk.
Computers and multimedia projector.
Software: *Statistica, Excel*.
Books, Yearbooks database.

WAYS OF ASSESSMENT (F – FORMING, P – SUMMARY)
F1. The current assessment of student activity
F2. Rating creativity in the work team
F3. Tests verifying the effects of teaching at different levels of education and skills using known computer packages
P1. A comprehensive assessment of students' work throughout the semester, taking into account all the partial marks

STUDENT WORKLOAD

Form of activity		**Average number of hours to complete the activity**		
		[h]	ECTS	ECTS
Contact hours with the teacher	LECTURE	**15**	**0,6**	**0,6**
Preparing to exam				
Exam				
Contact hours with the teacher	CLASSES	**15**	**0,6**	**1,8**
Preparing to classes		**20**	**0,8**	
Preparing to test		**10**	**0,4**	
Getting Acquainted with the indicated literature		**10**	**0,4**	**0,4**
Consultation		**5**	**0,2**	**0,2**
TOTAL NUMBER OF HOURS / ECTS CREDITS FOR THE COURSE		**∑75**	**∑ 3**	

BASIC AND SUPPLEMENTARY LITERATURE
Basic literature

Annabel Ness Evans, *Using Basic Statistics in the Behavioral and Social Sciences*, SAGE Publications Ltd, 2013.
Allan Bluman, *Elementary Statistics: A Step By Step Approach*, Mcgraw–Hill Publ.Comp., 2011.

Supplementary literature

J. Crawshaw, J. Chambers, *A concise course in advanced level statistics,* Nelson Thornes Ltd., 2002.

TEACHERS (NAME, SURNAME, ADRES E–MAIL)

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MATRIX OF REALIZATION OF LEARNING EFFECTS

The learning effect	Reference to the effects of the defined effects for the entire program (PEK)	Course aims	Course content	Teaching tools	Evaluation method
EU 1	K_W08, K_U02, K_K01	C1,C2	L1-L4, L8-L9, C1-C4, C8-C9	1,2,3,4	F1,F2,F3
EU 2	K_W08, K_U02, K_K01	C1,C2	L5-L7 C6-C7	1,2,3,4	F1,F2,F3
EU 3	K_W04, K_W08, K_U06, K_K01	C1,C2	L2-L9, C1-C10	1,2,3,4	F1,F2,F3, P1
EU 4	K_W01, K_W04, K_W05, K_W08, K_U02, K_U03, K_U06, K_K01, K_K05	C1,C2	L1-L9 C1-C10	1,2,3,4	F1,F2,F3, P1

EVALUATION FORM – DETAILS

	For a grade of 2	For a grade of 3	For a grade of 4	For a grade of 5
Effect 1	A student is unable to calculate the measures that describe the structure of the population, the correlation measure of socio-economic phenomena and the measures of the dynamics of socio-economic phenomena.	A student correctly calculates some of the measures that describe the structure of the population, the correlation measure of socio-economic phenomena and the measures of the dynamics of socio-economic phenomena.	A student correctly calculates all measures she/he knows that describe the structure of the population, the correlation of socio-economic phenomena and the measures of the dynamics of socio-economic phenomena.	A student correctly calculates all measures she/he knows that describe the structure of the population, the correlation of socio-economic phenomena and the measures of the dynamics of socio-economic phenomena. Independently identifies statistical tools and select the most proper ones.
Effect 2	A student is unable to calculate	A student is able to calculate the measure of correlation of socio-economic phenomena and can interpret certain measures.	A student is able to calculate the measure of correlation of socio-economic phenomena and interpret them correctly.	A student is able to calculate the measure of correlation of socio-economic phenomena and interpret them correctly. He/she can compare the efficiency of used statistical tools.

Effect 3	A student is not able to estimate any parameter of the general population. He/she can't verify statistical hypotheses.	A student correctly reckons the confidence intervals for the selected parameter of the general population. He/she can use some parametric tests.	A student correctly estimates parameters of the distribution of the general population. The student can verify the selected hypotheses concerning the basic parameters of the distribution of the general population.	A student correctly estimates parameters of the distribution of the general population. The student can verify the hypotheses concerning the basic parameters of the distribution of the general population. Creatively implements methods of statistical inference in the analysis of the production process. He/she effects a substantive discussion of possible solutions.
Effect 4	Student doesn't know the interpretation of the individual measures.	Student knows the interpretation of some measures he/she knows.	Student knows the interpretation of all measures he/she knows.	Student knows the interpretation of all measures he/she knows. He/she interprets all measures relatively to socio-economic phenomena.

OTHER USEFUL INFORMATION ABOUT THE SUBJECT

Information about where you can see the presentations to classes, lab instructions, etc. are sent electronically to the e-mail addresses of individual groups.

Information on the place of the schedule – information can be found on the website of the department.

Information on the timing of classes (day of week / time) – information can be found on the website of the department.

Information on the consultation (hours + space) – are given to students during the first class, can be found on the website of the department and information showcase of the Department of Statistics and Econometrics.