



Approved by: .....

Dean

Date .....

**SOFIA UNIVERSITY "ST. KLIMENT OHRIDSKI"**

Subject area: (code and name)

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PSYCHOLOGY

**SYLLABUS**

Course: 

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(code and name) Advanced statistics

**Lecturer:** assoc. prof. Kaloyan Valentinov Haralampiev, PhD

Assistant:

Academic work	Type	Number of classes
In-class work	Lectures	30
	Seminars	15
	Practical classes (teaching assistance)	
<b>Total in-class work</b>		<b>45</b>
Out-of-class work	Reports	
	Presentations	
	Essays/scholarly papers	30
	Projects	40
	Study trips	
	Self-guided library/database work	45
<b>Total out-of-class work</b>		<b>105</b>
<b>Total of academic work</b>		<b>150</b>
<b>ECTS credits in-class work</b>		<b>1,5</b>
<b>ECTS credits out-of-class work</b>		<b>3,5</b>
<b>Total ECTS credits</b>		<b>5</b>

<b>№</b>	<b>Grading</b>	<b>% of the grade</b>
1.	Workshops/discussions of reports and papers	
2.	Participation in class discussions	
3.	Demonstration classes	
4.	Study visits	
5.	Portfolio	
6.	Tests	
7.	Case studies	
8.	Homework assignments and tests	100
9.		
10.		
11.		
12.	Exams	

### **Outline of the course**

The course has two main focuses. The first one is the construction of complex scales and their standardization. The second one is statistical methods for analyzing the results of psychological testing.

### **Preliminary requirements**

None

### **Expected outcomes**

1. Students will get basic knowledge how to construct the scales of measurement and how to use statistical methods.
2. Students will acquire basic skills to work with statistical software (SPSS).
3. Students will acquire basic skills for writing analytical text and for presentation to the audience.

## *Syllabus*

<b>№</b>	<b>Topic</b>	<b>Number of classes</b>
1	<b>Introduction to SPSS</b> Basic features of SPSS. Preparing of data entry table. Names and labels of the variables. Codes and labels of the categories.	2+1
2	<b>Data entry</b> Data entry. Data import from different sources.	2+1
3	<b>Data processing</b> Sources of errors in the data set. Detection of the errors and their correction.	2+1
4	<b>Introduction to statistical methods</b> Populations, cases, variables. Qualitative and quantitative	2+1

	analyses. Tasks of the statistical analysis – descriptive statistics, measures of associations, forecasts.	
5	<b>Simple and complex scales</b> Simple scales – nominal, ordinal, interval. Likert scale – validity, reliability, internal consistency. Use of normal distribution in the psychology research. Data transformation – grouping in intervals. Comparison of different scales – standardizing, normalization.	2+1
6	<b>Factor analysis</b> Detection of the number and content of the factors. Rotation. Factor analysis and Likert scale – similarities and differences.	2+1
7	<b>Descriptive statistics – frequency distribution</b> Frequency distributions of different scales. Percent, valid percent, cumulative percent. Statistics: central tendency, dispersion, skewness and kurtosis.	2+1
8	<b>Samples</b> Population and sample. Representativeness of the sample. Parameters and estimations. Errors. Inference – confidence interval and hypotheses testing.	2+1
9	<b>Hypotheses testing</b> Null and alternative hypothesis, type I and type II errors (false negative and false positive). Comparing of means. Comparing of distributions.	4+2
10	<b>Measures of associations between nominal and ordinal variables</b> Crosstabs. Conditional distributions. Row and column percentages. Chi-square test. Cramer’s coefficient. Adding of more independent variables.	2+1
11	<b>Measures of associations between nominal or ordinal independent variable and interval dependent variable</b> Analysis of variance (ANOVA). Eta-square. Post hoc tests. Adding of more independent variables. Repeated measures ANOVA.	2+1
12	<b>Measures of associations between interval variables</b> Regression and correlation analyses. Choosing of the best model. Adding of more independent variables. Rank correlation.	2+1
13	<b>Measures of association between independent variables of different types regardless of the type of dependent variable</b> Classification trees. Growing methods.	2+1
14	<b>Cluster analysis</b> Hierarchical clusters. K-means clusters. Two steps clusters. Comparison of cluster membership obtained by different methods.	2+1

*Exam Questions*

№	Question
1	<b>Introduction to SPSS</b> Basic features of SPSS. Preparing of data entry table. Names and labels of the variables. Codes and labels of the categories.
2	<b>Data entry</b> Data entry. Data import from different sources.
3	<b>Data processing</b> Sources of errors in the data set. Detection of the errors and their correction.
4	<b>Introduction to statistical methods</b> Populations, cases, variables. Qualitative and quantitative analyses. Tasks of the statistical analysis – descriptive statistics, measures of associations, forecasts.
5	<b>Simple and complex scales</b> Simple scales – nominal, ordinal, interval. Likert scale – validity, reliability, internal consistency. Use of normal distribution in the psychology research. Data transformation – grouping in intervals. Comparison of different scales – standardizing, normalization.
6	<b>Factor analysis</b> Detection of the number and content of the factors. Rotation. Factor analysis and Likert scale – similarities and differences.
7	<b>Descriptive statistics – frequency distribution</b> Frequency distributions of different scales. Percent, valid percent, cumulative percent. Statistics: central tendency, dispersion, skewness and kurtosis.
8	<b>Samples</b> Population and sample. Representativeness of the sample. Parameters and estimations. Errors. Inference – confidence interval and hypotheses testing.
9	<b>Hypotheses testing (significance testing)</b> Null and alternative hypothesis, type I and type II errors (false negative and false positive). Comparing of means. Comparing of distributions.
10	<b>Measures of associations between nominal and ordinal variables</b> Crosstabs. Conditional distributions. Row and column percentages. Chi-square test. Cramer’s coefficient. Adding of more independent variables.
11	<b>Measures of associations between nominal or ordinal independent variable and interval dependent variable</b> Analysis of variance (ANOVA). Eta-square. Post hoc tests. Adding of more independent variables. Repeated measures ANOVA.
12	<b>Measures of associations between interval variables</b> Regression and correlation analyses. Choosing of the best model. Adding of more independent variables. Rank correlation.
13	<b>Measures of association between independent variables of different types regardless of the type of dependent variable</b> Classification trees. Growing methods.
14	<b>Cluster analysis</b> Hierarchical clusters. K-means clusters. Two steps clusters. Comparison of cluster membership obtained by different methods.

## *Bibliography*

### *Basic*

Kaplan, R. M., D. P. Saccuzzo. Psychological Testing: Principles, Applications and Issues, Seventh Edition. 2009

Pallant, J. SPSS Survival Manual. A Step by Step Guide to Data Analysis Using SPSS. 4th edition. Allen & Unwin, 2011

### *Additional*

## *Criteria for evaluation*

The evaluation is based on paper. Tasks for papers are given in advance by the lecturer. The base exam mark is Excellent (6). Any error or omission leads to a reduction of the exam mark with a half (0.5). The final exam mark is obtained as follows:

For exam mark „ <b>Excellent</b> “	0 errors and 0 omissions or 1 error and 0 omissions or 0 errors и 1 omission
For exam mark „ <b>Very good</b> “	2 errors и 0 omissions or 1 error и 1 omission or 0 errors и 2 omissions or 3 errors и 0 omissions or 2 errors и 1 omission or 1 error и 2 omissions or 0 errors и 3 omissions
For exam mark „ <b>Good</b> “	4 errors и 0 omissions or 3 errors и 1 omission or 2 errors и 2 omissions or 1 error и 3 omissions or

	0 errors и 4 omissions or 5 errors и 0 omissions or 4 errors и 1 omission or 3 errors и 2 omissions or 2 errors и 3 omissions or 1 error и 4 omissions or 0 errors и 5 omissions
For exam mark „Satisfactory“	6 errors и 0 omissions or 5 errors и 1 omission or 4 errors и 2 omissions or 3 errors и 3 omissions or 2 errors и 4 omissions or 1 error и 5 omissions or 0 errors и 6 omissions

**Date 27.03.2016**

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