Course code. Course title **STATISTICAL METHODS IN PSYCHOLOGY, 1ST PART**	
Name of the lecturer Assoc. Prof. Sonya Karabeliova, PhD, DSc	
Type of course *mandatory*	*Level of course* *BACHELOR OF ARTS*
Year of study 2	*Semester/trimester* 3
Number of ECTS credits allocated 6,5	*Number of hours* 30+30
Teaching methods *full time*	*Language of instruction* *Bulgarian*
Assessment methods *An eligibility test ,* theoretical, practical, and a written assignments	

Prerequisites - no

Object

This is a mandatory course designed to assist students in conducting psychological research. It includes research planning, implementation procedures, analyses of research data, and interpretation of relevant results. The main aim of the course is to teach theoretical knowledge and skills for processing and analyzing research data, as well as for interpreting the results from qualitative and quantitative statistical methods used in psychology research. Students use the SPSS statistical analysis software. Throughout the semester, the students are given a test that determines their eligibility to sit for the semester exam. The course concludes with a written theoretical exam, a practical exam, and a written assignment that includes description, analysis, and interpretation of the results of one empirical study. The students who wish to improve their grade prepare a course paper.

Course content

LECTURES

1. The development of the relation between psychology and statistics. The significance of statistical methods in psychological research. Science and the scientific method. Differences between scientific and everyday understanding. Empirical research — aims and stages. Hypotheses and research planning. Assessing empirical research. Ethical principles.
2. Functions and significance of statistics for the psychological empirical research. Basic concepts and important terms. Populations and samples. Types of samples — simple, systematic, stratified ratio, cluster, and representative. Sampling strategies and procedures. Parameters and statistics.
3. Descriptive and inferential statistical methods. Measurement scales — nominal, ordinal, interval, ratio, Likert. Characteristics of the measurement scales. Mathematical operations and statistical methods associated with each measurement scale.
4. Types of quantities — constants and variables. A variable — an operational definition. Types of variables — dependent, independent, discrete and

continuous. Relations between variables. Types of data — numeric and categorical.

5. Data description and data analysis. Frequency distributions. Types of frequency distribution. Tabular and graphic presentation of frequency distribution. Histograms, bar charts, pie diagrams. The frequency polygon. Skewness of the distribution — positive and negative. Characteristics of one-dimensional and multidimensional distribution.
6. Measures of the central tendency — mode, median, mean. Relative advantages and disadvantages of mode, median and mean.
7. Measures of variability. Variance. Standard deviation. The influence of the extreme values on the variance and on the standard deviation. The coefficient of variation.
8. Mean and variance as estimators. Sufficiency, unbiasedness, efficiency and resistance.
9. The normal distribution. The normal curve — definition, characteristics and use. The standard normal curve. Using the tables of the standard normal distribution. Measures related to the standard values (*z*). Standard values — reasons for using them, definition, calculation, characteristics. Transformed standard values. Standard error.
10. Categorical data and the Chi-squared distribution. The Chi-squared distribution — significance, classification. The Chi-squared distribution for ordinal data. Interpreting the results.
11. Methods for studying dependence — definition, types.
12. Bivariate frequency distribution. Correlation analysis — significance, definition, types. Direction and strength of the relationship. Pearson's coefficient — definition, calculation. Factors that affect the correlation. Interpreting the results.
13. Alternative correlation techniques — point-biserial and phi coefficients; biserial and tetrachoric correlation coefficients; contingency coefficient and Kendall's coefficient.

Total number of lecture periods — 30.

Seminars

1. SPSS — environment, primary functions and rules for using the program.
2. Starting the program. An overview of the SPSS windows. Opening an existing file. Naming and saving a file. Closing the program.
3. Processing data from an empirical psychological research. Summarizing data. Data entering and data editing.
4. Defining variables. Defining variable name, variable type, labels, and missing values. Eliminating data entering errors and problems.
5. Entering and editing data in tables. Types of commands. Data transformation. Computing variables. Functions.
6. Splitting a file into subgroups for independent analysis.
7. Tables — sorting, merging, incorporating parts of different tables.
8. Merging variables, recoding values, importing into other programs, printing.
9. Using descriptive statistical methods for processing and analyzing research data — an introduction.
10. Frequencies — tabular representation of results. Analysis and interpretation.
11. Frequencies — graphic representation of results. Analysis and interpretation.
12. Crosstabs — tabular presentation of results. Analysis and interpretation.
13. Crosstabs — graphic presentation of results. Analysis and interpretation.
14. Correlation analysis — application, types of correlation coefficients.

15. Correlation analysis — identifying and interpreting results.

Total number of seminar periods — 30.

Recommended literature

Анастази, А., Урбина С. (2002) *Психологическое тестирование*. Москва: Питер.
Брогли, Я., Петкова, Л. (1988) *Статистически методи в спорта*. София: Медицина и физкултура.
Гигова, В. (1999) *Статистическа обработка и анализ на данни*. С.
Гоев, В. (1996) *Статистическа обработка и анализ на информацията от социологически, маркетингови и политически изследвания със SPSS*. София: Университетско издателство „Стопанство".
Калинов, К. (2001) *Статистически методи в поведенческите и социалните науки*. София: Издателство на НБУ.
Пишо, П. (2003) *Психологическое тестирование*. Москва: Питер.
Сидоренко, Е. (2000) *Методы математической обработки в психологии*. Санкт Петербург: Речь.
Стоименова, Е. (2000) *Измерителни качества на тестове*. София.
Тодорова, С. (2004) *Статистика в икономиката и бизнеса. Методи, решения и изпитни тестове*. София: ИК „Прес".
Харалампиев, К. (2009) *Работа с данни в SPSS.* София: Университетско издателство „Св. Кл. Охридски".
Харалампиев, К. (2007) *SPSS за напреднали.* София: Университетско издателство „Св. Кл. Охридски".
Харалампиев, К. (2003) *Въведение в основните статистически методи за анализ.* София: Балкани.
Чолаков, К. (2007) *Трудова и социална статистика*. София: УНСС.
Щетински, Д. (2005) *Измервания и анализ в поведенческите и социалните науки*. София: ИК БАН.
Breakwell, G., M., Hammond, S., Fife-Schaw, C. (2002) *Research Methods in Psychology*. London: Sage Publication.
Glasnapp, D., R., Roggio, J., P. (1985) *Essentials of Statistical Analysis for the Behavioral Sciences*. Ohio, Columbus: Bell & Howell Company.
Freedman, D., A. (2009) *Statistical Models: Theory and Practice*. Cambridge: Cambridge University Press.
Field, A. (2005) *Discovering Statistics using SPSS*. London: Sage Publications.
Howell, D., C. (2002) *Statistical Methods for Psychology*. CA: Duxbury, Thomson Learning.
Kerlinger, F., N. (1990) *Foundations of Behavioral Research*. New York: Harcourt Brace College Publishers.
Salant, P., Dillman, D., A. (1994) *How to Conduct ypur own survey*. New York: John Wiley & Sons, Inc.
Wilcox, R., R. (2009) *Basic Statistics. Understanding Conventional Methods and Modern Insights*. Oxford: Oxford University Press.
Witte, R., S. (1989) *Statistics*. Florida, Orlando: Holt, Rinehart and Winston, Inc.