Course code. Course title
STATISTICAL METHODS IN PSYCHOLOGY, 2ND 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* 4
Number of ECTS credits allocated 5	*Number of hours* 30+30
Teaching methods full time	*Language of instruction* Bulgarian
Assessment methods *a test determining the eligibility,* theoretical, practical and a written assignment	

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. Linear regression — definition, regression coefficient, interpretation of results. Assessing the adequacy of the regression model.
2. Statistical methods for hypothesis testing — basic concepts, terminology. The sequence of hypothesis testing steps. The Null hypothesis.
3. Type I and Type II errors. Statistical reliability of the results. Incorrect decisions about statistical reliability.
4. Significance in research designs. Incorrect interpretations of significance.
5. Parametric and non-parametric methods for hypothesis testing. Choosing an appropriate statistical criterion.
6. Parametric statistical methods for hypothesis testing. One sample t-test. Comparing the mean and standard deviation of the sample and the population. Analysis and interpretation of the results.
7. Independent vs. dependent samples. Post Hoc comparisons. Scheffe's test. Dunnett's test. Comparing alternative procedures. Analysis and interpretation of the results.

8. Analysis of variance — essence, etymology. Fisher's f-criterion. One-Way Analysis of Variance (One-Way ANOVA). Post Hoc comparisons. Sample sizes. Significance of the experimental effect. Analysis and interpretation of the results.
9. Two-Way Analysis of Variance (Two-Way ANOVA). Multiple comparisons. Expected mean squares. Significance of the experimental effect. Analyzing the sample sizes. Analysis and interpretation of the results.
10. Analyses of variance and covariance as General Linear Models. The General linear models. Factorial designs. Analysis and interpretation of the results. Alternative experimental designs. Analysis and interpretation of the results.
11. Non-parametric statistical methods for hypothesis testing. Mann-Whitney test. Wilcoxon test. Comparing the two tests.
12. Non-parametric statistical methods for hypothesis testing. Student's U-criterion. McNemar's Chi-squared test. Freedman's Chi-squared test.
13. Validity — definition, types. Methods for testing construct validity. Factor and factor analysis — definitions, factor analysis methods. Rotations and simplifications of the structure. Analysis and interpretation of the results.
14. Reliability. Systematic and random errors. Factors increasing or decreasing reliability. Significance of reliability. Item analysis — definition, application. Analysis and interpretation of the results.

Total number of lecture periods — 30.

Seminars

1. Linear Regression analysis — application, types.
2. Identifying the results of regression analysis. Interpretation.
3. Methods for comparing means. One sample t-test. Analysis and interpretation of the results.
4. Independent samples t-test. Analysis and interpretation of the results.
5. Paired samples t-test. Analysis and interpretation of the results.
6. One-Way Analysis of Variance (One-Way ANOVA). Analysis and interpretation of the results.
7. Two-Way Analysis of Variance (Two-Way ANOVA). Analysis and interpretation of the results.
8. General linear models.
9. Identifying, analyzing and interpreting the results from general linear models.
10. Non-parametric statistical methods. Mann-Whitney test. Wilcoxon test. Analysis and interpretation of the results.
11. Non-parametric statistical methods. Student's U-criterion, McNemara's Chi-squared test, Freedman's Chi-squared test. Analysis and interpretation of the results.
12. Classical factor analysis — application, methods.
13. Classical factor analysis using the principle components analysis. Identification, analysis and interpretation of the results.
14. Item analysis — application, coefficients.
15. Item analysis. Identification, analysis and interpretation of the 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 your 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.