

### CURRICULUM OF THE COURSE

<b>Subject:</b>	Biostatistics	<b>Form of study:</b>	daily
<b>Prerequisites:</b>	Medical Informatics	<b>Study period:</b>	4,6,8,10
<b>Study programme:</b>	General medicine	<b>Range:</b>	2 hours / week
<b>Category:</b>	elective	<b>Credits:</b>	2
<b>Teaching form:</b>	practicals		
<b>Evaluation:</b>	obtained credits		

<i>Week</i>	<i>Practical lesson</i>
1.	<b>Basic terms.</b> Experiment, statistical population, statistical description. Ways to obtain information and registration for statistical data processing. Range of sample set, representative sample of population, data analysis.
2.	<b>Descriptive statistics.</b> Univariate analysis, distribution of a random variable central tendency, dispersion and the shape of the distribution. Theoretical models of probability distribution. Frequency tables, graphical presentation, histograms, properties of histograms, data homogeneity.
3.	Overview of available statistical software. Advantages and disadvantages. Basic principles of medical data protection in database systems. Solving of simple experimental tasks, calculation of descriptive statistics and their practical meaning.
4.	<b>Tests of outliers values.</b> Observations, variability in measurement, experimental error. Solving of concrete tasks using standard software.
5.	<b>General theory of statistical hypotheses testing.</b> Tests of hypotheses for mean value, tests of hypotheses for dispersion.
6.	<b>One way analysis of variance.</b> Solving of concrete tasks using commercial software.
7.	Utilization of analysis of variance methods in medicine. Solving of given experimental problems.
8.	<b>Nonparametric tests.</b> Examples and solving of specific tasks. <i>Written test.</i>
9.	Examples of utilization of various types of tests in solving of experimental situations.
10.	<b>Regression and correlation analysis.</b> Simple linear regression. Point estimation and interval estimation of parameters.
11.	Measures of tightness in statistical dependence. The correlation coefficient as a measure of linear relationship between two variables. Solving of specific tasks. Examples of wrong conclusions in results interpretation.
12.	<b>Tests of hypotheses about probability.</b> Preparation and evaluation of questionnaire. Pivot tables.
13.	<b>Models of uncertainty.</b> Models of uncertainty and their applications in medicine – practical utilization in medicine. <i>Practical test.</i>
14.	Solving of concrete tasks using commercial statistical software and graphical interpretation of results. <i>Knowledge evaluation.</i>

**Requirements to complete the course:**

1. 100% and active attendance.
2. Min. 60% from each test during the term.
3. Elaboration of all given classworks.

***Recommended literature:***

1. Dale E. Mattson, Ph.D., Statistics, Difficult concepts, understandable explanations, Bolchay - Carducci Publishers, 1999.
2. Douglas G. Altman, Practical Statistics for Medical Research, CHAPMAN @ HALL, London, 1994.
3. Notes from exercises.

Last modified: 10. February 2015