

CURRICULUM OF THE COURSE

Subject:	Medical Informatics and Statistics 2	Form of study:	daily
Prerequisites:	Medical Informatics and Statistics 1	Study period:	4
Study programme:	Dental medicine	Range:	2 hours / week
Category:	compulsory	Credits:	3
Teaching form:	practicals		
Evaluation:	examination		

Week	<i>Practical lesson</i>
1.	Estimation theory and statistical tests. Basic terms and principles of inferential statistics, population, sample, parameter estimation methods (point and interval estimation), confidence interval, test errors, significance level, power of a test.
2.	Testing of statistical hypothesis, formulation of null and alternative hypothesis, critical value, test criterion, hypothesis test for a mean, accepting and rejecting of null hypothesis, t-test.
3.	Continuing of hypothesis tests, hypothesis test for a variance, examples used in medicine, F-test, F-test of the equality of two variances.
4.	Nonparametric tests, goodness of fit test (Chi-square goodness of fit test), distribution function, theoretical and empirical distribution. Examples of practical utilization in medicine and working with experimental tasks.
5.	Analysis of variance, principles of analysis of variance, examples and solution of experimental tasks, effect of a factor, one-way analysis of variance, two-way analysis of variance. <i>Theoretical test.</i>
6.	Regression analysis, correlation analysis, principles, properties, examples, intensity of dependence, linear and nonlinear regression functions, results interpretation, correlation coefficient, coefficient of determination.
7.	Continuing in work with experimental data related to regression and correlation analysis, conditions of the use in medical research, results interpretation.
8.	Probability of hypothesis testing, principles, examples, contingency tables, principles and rules of contingency tables.
9.	Summary of information on statistical estimations and tests and their use in clinical trials. <i>Practical test.</i>
10.	Evidence based medicine. Significance of systematic reviews in EBM, main principles, formulation of clinical question, evidences searching methods. Tools of critical analysis used in searching results, hierarchy of evidences, clinical studies, review articles, systematic reviews databases. Searching for evidences in electronic databases.
11.	Terminology in medicine. SNOMED, UMLS, MeSH. Evaluation of the outputs in clinical studies and scientific information to answer clinical question. Assessment of systematic reviews in evidence based medicine.
12.	Radiology Information System. Working with PACS. Advantages of electronic picture documentation, practical utilization, standards (DICOM), study of anonymous records. <i>Presentation of clinical studies.</i>
13.	Electronic health records in out-patient clinics. Working with specialized applications in dental medicine clinic. Patients' registration, ordering, economic factors, prescriptions, reports.

14.	<p>Hospital and Laboratory Information Systems. Operation principles, advantages, utilization, modules in HIS. Communication between users. Outpatient clinic in HIS, interface description, creation of new outpatient clinic card, anamnesis, consilium, printing records. Operation principle, advantages, usability of LIS. Registration of patients, requisitions and results of examination. Working with results of biochemistry laboratory, data registration, statistics, and outputs.</p> <p><i>Knowledge evaluation.</i></p>
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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.
4. Final exam.

Recommended literature:

1. Majerník J., Švída M., Majerníková Ž.: Medicínska informatika, UPJŠ, Košice 2010, Equilibria, ISBN 978-80-7097-811-5.
2. Dale E. Mattson, Ph.D., Statistics, Difficult concepts, understandable explanations, Bolchay - Carducci Publishers, 1999.
3. Douglas G. Altman, Practical Statistics for Medical Research, CHAPMAN @ HALL, London, 1994.
4. Majerník J.: Introduction to biostatistics. Multimedia support in the education of clinical and health care disciplines :: Portal of Faculty of Medicine, Available from WWW: <<http://portal.lf.upjs.sk/articles.php?aid=82>>. ISSN 1337-7000.
5. Majerník Jaroslav: Hospital information system. Multimedia support in the education of clinical and health care disciplines :: Portal of Faculty of Medicine, Available from WWW: <<http://portal.lf.upjs.sk/articles.php?aid=107>>. ISSN 1337-7000.
6. Manuals of information systems used in health care system.

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