Pavol Jozef Šafárik University in Košice, Faculty of Medicine
Department of Medical Informatics

CURRICULUM OF THE COURSE

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

Week	*Practical lesson*
1.	**Basic Terms.** Information, informatics, information technologies, utilization of informatics in medicine - medical informatics, eHealth, electronic health record, ePreskription, eMedication, eAllocation, Hospital Information Systems, Laboratory Information Systems, Clinical Information Systems, Radiology Information Systems and PACS, telemedicine, bioinformatics, electronic signature, eLearning in medicine, information systems and data protection.
2.	**Databases.** Database system, data processing, operating principle, principles of databases. Initiation of database system, modification of main settings, working with database system. Design of database tables, creation of new fields, data types, specification of primary keys, fields properties, input mask.
3.	Interconnection of database tables, types of relationships, referential integrity, cascade update related fields, cascade delete related records, data registration and modification, new records in database tables, calculations.
4.	Specification of properties in fields depending on data type, equations and functions in table fields, data inport and export, datasheet formating options, embeded datasheets in database tables. *Written test.*
5.	Forms in database, types of database forms, layout of form controls, creation and modification of database forms, forms with subforms, linked forms, graphical modifications, adding and working with the fields in forms, data editing using linked forms, selection of fields, tab indexes, managing controls in the forms.
6.	Working with data in database, searching for information, data filtering and sorting, advanced filtering. Queries, creation of queries, selective query, crosstab query, data modifying queries, data selection criteria, summaries, expressions in queries.
7.	Reports in database, data summary, grouping levels, sorting and counts, design, report generation and modification, print preview and preparation of reports for printing, report header, page header, details, page footer and report footer.
8.	Summary of practical skills and basic principles in databases, selected topics in advanced database features. *Practical test.*
9.	**Introduction to statistics.** Basic terms, data collection methods, survey and experiment, population, sample, variable, statistics. Sample size specification, presentation of the sample, data analysis methods.
10.	Descriptive statistics, measure of location (mean, median, modus), measure of variability (sample variance, variance, standard deviation), measure of skewness, measure of kurtosis. Basic statistical data description.
11.	Organizing data, data sampling and selection, functions, calculations and summaries. Frequency, relative frequency, cumulative frequency, frequency table, graphical presentation, histogram, histograms' properties.
12.	Introduction to theory of probability, random variables, distribution functions, density function, types of probability distribution.

13.	Theoretical distribution models of random variables, normal distribution, examples and simple experimental tasks. *Practical test.*
14.	Theoretical principles of statistical hypothesis. Examples of inferential statistics and its practical utilization in medicine. *Knowledge evaluation.*

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. Majerník J., Švída M., Majerníková Ž.: Medicínska informatika, UPJŠ, Košice 2010, Equilibria, ISBN 978-80-7097-811-5.
2. Majerník J.: Databases in MS Access. 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=85. ISSN 1337-7000.
3. Dale E. Mattson, Ph.D., Statistics, Difficult concepts, understandable explanations, Bolchay - Carducci Publishers, 1999.
4. Douglas G. Altman, Practical Statistics for Medical Research, CHAPMAN @ HALL, London, 1994.
5. 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.
6. Notes from exercises.

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