MEDICAL UNIVERSITY – SOFIA

MEDICAL FACULTY

DEPARTMENT "SOCIAL MEDICINE AND HEALTH MANAGEMENT"

SECTION "BIOSTATISTICS AND MEDICAL INFORMATICS"

TRAINING PROGRAM

"INFORMATICS"

FOR DENTIST STUDENTS - Ist COURSE, IInd SEMESTER

Total-30 hours

Lectures — 0 hours Practical classes - 30 hours

Finish with examination at the end of the term

S o f i a

2011

T R A I N I N G P R O G R A M

Subject: Informatics

Degree: Master

Subject kind: Obligatory

Continuation: One semester (Second semester)

Level of the course: Level M (master level)

Types of evaluation: Continuous examination, Test, Exam

Methods and forms of training: Practical exercises

Term exam: Current examination

Leading teacher: Assoc. Prof. Gencho Genchev PhD

Department: Section Biostatistics and Informatics “Social Medicine and Health Management”, Medical University, Sofia

Course Annotation: The course on Informatics provide the opportunity to obtain theoretical knowledge and practical experience to organize and use data bases and work in Internet, in the field of dental health and dental services.
Course description: The course consists of 30 academic hours - practical exercises.

The training forms are:

- Practical exercises;
- Workshops;
- Tasks.

Control of knowledge and skills of the students is realized by:

- Current examination;
- Tests;
- Practical tasks;
- Colloquiums;
- Examination.

Supporting Tools: Computers

AIM of the program:

Obtain theoretical knowledge and practical experience to organize and use data bases and MSoff, in organizing of dental health services according to contemporary European standards.

Objectives of the program:

The objectives of the course "Informatics" are:

1. Obtaining basic theoretical and problem based knowledge on Medical informatics, as well practical skills to use contemporary computer systems, software, and information transferring.
2. Acquiring obligatory minimum of knowledge about nature, principles and logics of statistical analysis, about cognitive possibilities and specific requirements in using basic statistical methods in biology, medicine and health care. Forming skills in applying computers for the most important statistical methods.

Preliminary requirements:

Before beginning the training on Informatics, it is preferable that students have basic Computer literacy.

Expected results: It is expected that students work with PPP, Windows, Word, Works, SPSS, after completing the course.

Recommendet literature:

1. VrabchevN., Genchev G. Medical Informatics. Sofia, Delphi 2002, 166.
2. G. Ranchov Biostatistics and biomathematics. Conceptions, methods, applications. Sofia, Eko Print 2008, 388.

THEMATIC PROGRAM EXERCISES

(by training weeks - summer term)

INFORMATICS

for dentist students

1. **OS Windows. WinWORD**. Basics of word-processing. Fonts, Pages, Paragraphs and formatting, tabulation. Tables, Auto-corrections.

2. **EXCEL**. Basic characteristics. Organization of data entering and windows. Functions and charts.

3. **Data base**. Creating and working with database in WORKS system. Forms - design. Field-defmition, and data entering in forms. Calculations with formulas.

4. **Data base**. Form reorganization. Updating. Data retrieving (QUERY command) and showing on the screen - LIST and FORM commands.

5. **Data Base.** Reporting. Components of the report. Sort and arrangement. Statistical elements in report.

6. **Colloquium** - practical task on database and theoretical test on medical informatics.

7. **Structure, functions and working with statistical program package SPSS.** Scales - nominal, ordinal, interval and ratio. Data entering and manipulation.

8. **Empiric distributions.** Tables and graphical presentation - polygons and histograms. Summary descriptive measures - mean, median, mode, variance, standard deviation, skewness and kurtosis.

9. **Interval estimation** - standard error, confidence interval. Analyzing of alternative (dichotomous) variables - proportion, confidence interval.

10. Estimating and testing of hypothesis **of difference between two samples -** related or independent; parametric tests.

11. Estimating and testing of hypothesis **of difference between two samples** - **related or independent; nonparametric tests. Correspondence between empiric and theoretical distributions** - Pearson's and Kolmogorov-Smimov's criteria.

12. **Statistical analysis of relations between categorical variables**. Chisquare test - coefficients of contingency.

13. **One-Way ANOVA**.

14. **Colloquium** - theoretical test and task on biostatistics.

15. **Final evaluation.**

EXAMINATION SYNOPSES

OF COMPUTER TRAINING

FOR DENTIST STUDENTS OF MEDICAL UNIVERSITY, SOFIA,

1. Development of the computer technology.
2. Computer's generations.
3. Information. Measurement units. Information flow.
4. Architecture and functioning of the microcomputers.
5. Computer characteristics - CPU, RAM.
6. Computer characteristics - peripheral devices.
7. Operating Systems. Purpose and functions.
8. Organization of information on discs - files and folders.
9. Operating System WINDOWS. General characteristics.
10. Databases. Main definitions. Kinds.
11. Medical information systems.
12. Systems for medical decision making (expert systems).
13. Transmission of information. Signals. Types.
14. Coding information. Redundancy.
15. Transmission of information in biological objects.
16. Local nets. Types. Characteristics.
17. Global nets - INTERNET.
18. WORLD WIDE WEB - client and server. Searching information in INTERNET.
19. Cell telephone network - common performance, ability to connection with INTERNET
20. Types of data. Scales of measurement.
21. Populations, samples, representative sample. Empirical distribution - analysis. Graphical and table display of data. Crosstabulation.
22. SPSS - structure and functions.
23. Measures of central tendency - mean, median, mode.
24. Measures of dispersion - range, variance, standard deviation. Measures of skewness and kurtosis.
25. Assessment of statistical parameters - point and interval valuations. Confidence interval of the mean.
26. Statistical hypotheses - definition and types. Testing statistical hypotheses. Errors - type I and II. Significance level, critical area, test power.
27. Parametric tests for testing statistical hypotheses for difference of two dependent or independent samples.
28. Nonparametric tests for testing statistical hypotheses for difference of two dependent or independent samples - tests of Mann-Whitney and Wilcoxon.
29. Analysis of relations between categorical variables - method Chi-squire, coefficients of contingency.
30. One-Way ANOVA - main purpose and requirements, stages of the analysis.

Chief of the section
Biostatistics and Medical Informatics:
/Assoc. Prof. Genchev, PhD/