

SYLLABUS

concerning the cycle of education 2022-2028

(date range)

1.1. BASIC INFORMATION CONCERNING THIS SUBJECT / MODULE

Subject / Module	Information technology and biostatistics
Course code / module *	IB/B
Faculty of (name of the leading direction)	College of Medical Sciences
Department Name	Laboratory of Medical Informatics - Institute of Physiotherapy
Field of study	Medical
Level of education	Uniform master studies
Profile	General academic
Form of study	Stationary / non-stationary
Year and semester	Year I, semester 1
Type of course	Obligatory

* - According to the resolutions of the Faculty of Medicine

1.2. Forms of classes, number of hours and ECTS

Lecture	Exercise	Conversation	Laboratory	Seminar	ZP	Practical	Self-learning	Number of points ECTS
10				20				2

1.3. The form of class activities

classes are in the traditional form

classes are implemented using methods and techniques of distance learning

1.4. Examination Forms / module (exam, credit with grade or credit without grade)

LECTURE - PASS WITHOUT EVALUATION

SEMINARIUM - PASS WITHOUT EVALUATION

LAB (PRACTICE) - PASS WITH GRADE

2. REQUIREMENTS

BASIC OPERATIONS ON DIRECTORIES AND FILES.

SKILLS TO RECOGNIZE BASIC COMPUTER PROGRAMS.

3. OBJECTIVES, OUTCOMES, AND PROGRAM CONTENT USED IN TEACHING METHODS

3.1. Objectives of this course/module

C1	Mastering theoretical foundations and gaining practical skills in the field of information technologies and their application in medicine.
C2	Acquiring basic knowledge in the field of medical statistics and mastering the theoretical basis of various statistical methods.
C3	Gaining practical skills, performing medical statistics and its analysis

3.2 OUTCOMES FOR THE COURSE / MODULE (TO BE COMPLETED BY THE COORDINATOR)

EK (the effect of education)	<i>The content of learning outcomes defined for the class (module)</i>	
EK_01	knows the basic IT and biostatistical methods used in medicine, including medical databases, spreadsheets and basics of computer graphics	B.W31
EK_02	knows the basic methods of statistical analysis used in population and diagnostic studies	B.W32
EK_03	knows the possibilities of modern telemedicine as a tool to support the work of a doctor	B.W33
EK_04	uses databases, including websites, and searches for the necessary information using the available tools	B.U11
EK_05	selects the appropriate statistical test, conducts basic statistical analyzes and uses appropriate methods of presenting the results; interprets the results of the meta-analysis, and also analyzes the likelihood of survival	B.U12
EK_06	explains the differences between prospective and retrospective, randomized and case-control studies, case reports and experimental studies	B.U13
EK_07	plans and performs simple research and interprets its results and draws conclusions	B.U14

3.3 CONTENT CURRICULUM (filled by the coordinator)

A. Lectures

Course contents
Subject of computer science, data and their processing
Medical databases, Security in information systems
Software and hardware

Medical applications of computer science - integrated information systems for health care facilities
Imaging in medicine (PACS image archiving and transmission system and the DICOM standard).
Basic statistical concepts: statistical group, unit statistic, statistical variables, stepwise and continuous
. Indicators of position, dispersion and asymmetry .
Linear Regression. Correlation coefficient Testing
hypotheses

B. Problems of auditorium, seminar, laboratory exercises, practical classes

Course contents (seminar) - 20 hours
Work in a computer network. User's mobile profile. Using network resources. Data, information, knowledge. The amount of information, units
Computer networks - types, construction, ISO / OSI model.
Microsoft Word editor. The rules of correct document formatting. Advanced editing functions
Microsoft Excel spreadsheet. Data entry and formulas. Data types. Formatting the sheet. Arithmetic and statistical calculations on the sheet
PowerPoint - the basics of creating presentations
Graphical representation of data.
Sheet as a simple database. Sorting and selection of data.
Medical databases in UR network resources
IT systems in health care
The essence of data compression. Usage. Types of compression (quantitative and qualitative, static and dynamic).
Security of information systems. Information protection
Computer viruses and other threats - types of threats, protection methods
Data encryption. Digital signature
Probability distributions: binomial, Poisson and normal. Types of variables. Parametric and non-parametric significance tests.
Statistical hypotheses
Types of variables in medicine - analysis of dispersion
Hypotheses. Testing hypotheses. Type I and type II errors
Statistical analysis of test results (algorithm)

3.4 TEACHING METHODS

LECTURE WITH MULTIMEDIA PRESENTATION, PRACTICAL SEMINARS IN THE COMPUTER ROOM.

4 METHODS AND EVALUATION CRITERIA

4.1 Methods of verification of learning outcomes

Symbol of effect	Methods of assessment of learning outcomes (Eg.: tests, oral exams, written exams, project reports, observations during classes)	Form of classes
EK_ 01 – EK_7	Lectures - final written exam Seminars - final credit with an assessment including: student's skills, attendance and assessment of the ability to work on a computer	LECTURES, SEMINARS

EK_ 01 - EK_7 Lectures - final written exam

Seminars - final credit with an assessment of the ability to work on a computer

LECTURES, SEMINARS

Knowledge assessment:

Written test

5.0 - has knowledge of each of the contents of education at the level of 90% -100%

4.5 - has knowledge of each of the content of education at the level of 84% -89%

4.0 - has knowledge of each of the content of education at the level of 77% -83%

3.5 - has knowledge of each of the content of education at the level of 70% -76%

3.0 - has knowledge of each of the content of education at the level of 60% -69%

2.0 - has knowledge of each of the contents of education below 60%.

Skill assessment

5.0 - the student actively participates in classes, recognizes and knows how to properly call computer programs. Skillfully uses basic information techniques,

4.5 - the student actively participates in classes, with little help from the teacher he recognizes and is able to correctly name computer programs. He uses basic information techniques well

4.0 - the student actively participates in classes, with minor corrections of the teacher, committing minor mistakes in recognizing computer programs. He uses the information techniques well.

3.5 - the student participates in classes, with numerous corrections and teacher's instructions recognizes and is able to correctly name computer programs, often making mistakes while using information techniques

3.0 - the student participates in classes, with very many corrections and teacher's instructions recognizes and is able to correctly name computer programs, very often making mistakes when using information techniques

2.0 - the student passively participates in classes, commits blatant mistakes in recognizing and correct naming of computer programs, misusing information techniques

5. Total student workload required to achieve the desired result in hours and ECTS credits

Activity	Hours / student work
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Hours of classes according to plan with the teacher	30
Preparation for classes	10
Participation in the consultations	3
The time to write a paper / essay	5
Preparation for tests	-
Participation in colloquia	2
Other (e-learning)	-
SUM OF HOURS	50
TOTAL NUMBER OF ECTS	2

6. TRAINING PRACTICES IN THE SUBJECT / MODUL

Number of hours	
Rules and forms of apprenticeship	

1. LITERATURE

1. David L. Katz , Joann G. Elmore, Dorothea M.G.Wild , Sean C. Lucan, Jekel's Epidemiology, Biostatistics, Preventive Medicine and Public Health. Fourth Edition, Elsevier
2. Ramona Nelson, Nancy Staggers. Health Informatics: An Interprofessional Approach. 2 nd edition, Elsevier

Acceptance Unit Manager or authorized person