Załącznik nr 1.5 do Zarządzenia Rektora UR nr 7/2023

SYLABUS
CONCERNING THE EDUCATION CYCLE *2024-2030*
(extreme dates)
Academic year 2024/2025

1. PODSTAWOWE INFORMACJE O PRZEDMIOCIE

Subject name	Information technology and biostatistics
Subject code*	IB/B
Name of the unit conducting the course	Medical College of The University of Rzeszów
Name of the unit conducting the course	Department of Photomedicine and Physical Chemistry, English Division
Field of study	medical direction
Level of study	Uniform master studies
Profile	General academic
Form of study	Stationary/ non- stationary
Year and semester/s of studies	Year I semester I
Type of subject	Obligatory
Language of instruction	English
Coordinator	Dr hab. n. med. David Aebisher, Prof UR
Name and surname of the person conducting the course	Dr hab. n. med. David Aebisher, Prof UR

* -optional, as agreed in the Unit

1.1. Forms of teaching, number of hours and ECTS points

Semester No.	Lecture	Exercise	Conversation	Laboratory	Seminar	ZP	Praktical	Other	**Number of points ECTS**
I	10	20							2

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1.2. The method of conducting classes

☒ classes in traditional form

☐ classes conducted using distance learning methods and techniques

1.3 Form of course credit (in progress) (exam, pass with grade, pass without grade)

2. REQUIREMENTS

BASIC OPERATIONS ON DIRECTORIES AND FILES. SKILLS TO RECOGNIZE BASIC COMPUTER PROGRAMS.

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

3.1 Subject Objectives

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 Learning outcomes for the subject

EK (learning outcome)	Content of the learning outcome defined for the subject	Reference to directional effects [1]
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 Program content

A. Topics of the lecture

Content
1. Work in a computer network. User's mobile profile.
2. Using network resources. Data, information, knowledge. The amount of information, units
3. Computer networks - types, construction, ISO / OSI model.
4. Microsoft Word editor. The rules of correct document formatting. Advanced editing functions
5. Microsoft Excel spreadsheet. Data entry and formulas.

B. Topics of exercises, seminars, laboratories, and practical classes

[1] In the case of a training path leading to a teaching qualification, also take into account the learning outcomes from the standards for training to practice as a teacher.

Content
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 IN THE COMPUTER ROOM.

4. EVALUATION METHODS AND CRITERIA

4.1 Ways to verify learning outcomes

Effect symbol	Methods of assessing learning outcomes (e.g.: colloquium, oral exam, written exam, project, report, observation during classes)	Form of didactic classes (l, ext, ...)
EK_ 01 – EK_7	LECTURES - FINAL WRITTEN TEST SEMINARS - FINAL CREDIT WITH AN ASSESSMENT INCLUDING: STUDENT'S SKILLS, ATTENDANCE AND ASSESSMENT OF THE ABILITY TO WORK ON A COMPUTER	LECTURES, EXERCISE

4.2 Conditions for passing the course (assessment criteria)

EK_ 01 - EK_7 Lectures - final written exam

Exercise - final credit with an assessment of the ability to work on a computer LECTURES, EXERCISE

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 NEEDED TO ACHIEVE THE INTENDED RESULTS IN HOURS AND ECTS POINTS

Activity	Hours / student work
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

** Please note that 1 ECTS point corresponds to 25-30 hours of total student workload.*

6. WORKSHOP PRACTICE WITHIN THE SUBJECT

MODUL NUMBER OF HOURS	
Rules and forms of apprenticeship	

7. LITERATURE

Basic literature: 1. Jekel's Epidemiology, Biostatistics, Preventive Medicine and Public Health. Fourth Edition, Elsevier
Additional literature: Ramona Nelson, Nancy Staggers. Health Informatics: An Interprofessional Approach. 2nd edition, Elsevier

Approval of the Head of Unit or authorized person