SYLLABUS

**concerning the cycle of education 2022-2028**

Academic year 2023/2024

1. **BASIC** **INFORMATION** **CONCERNING** **THIS** **SUBJECT**

|  |  |
| --- | --- |
| Subject | **Information technology and biostatistics** |
| Course code \* | **IB/B** |
| Faculty of (name of the leading direction) | **College of Medical Sciences, University of Rzeszów** |
| Department Name | **College of Medical Sciences, University of Rzeszów** |
| Field of study | **medical direction** |
| level of education | **Uniform** **master** **studies** |
| Profile | **General** **academic** |
| Form of study | **Stationary/** **non-** **stationary** |
| Year and semester | **Year** **I** **semester** **I** |
| Type of course | **Obligatory** |
| Language | **English** |
| Coordinator | **Dr** **hab.** **n.** **med.** **David** **Aebisher,** **Prof** **UR** |
| First and Last Name of the  Teachers | **Dr** **hab.** **n.** **med.** **David** **Aebisher,** **Prof** **UR** |

**\*** ***-*** **According** **to** **the** **resolutions** **of** **Educational** **Unit**

* 1. **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. **The form of class activities**

☒classes are in the traditional form

* classes are implemented using methods and techniques of distance learning
  1. **Examination Forms / module** (exam**, credit with grade** or credit without grade)

1. **REQUIREMENTS**

**Basic operations on directories and files. Skills to recognize basic computer programs.**

1. **OBJECTIVES, OUTCOMES, AND PROGRAM CONTENT USED IN TEACHING METHODS**
   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 |

* 1. **OUTCOMES FOR THE COURSE / MODULE (TO BE COMPLETED BY THE COORDINATOR)**

|  |  |  |
| --- | --- | --- |
| **EK** (the effect of education) | *The content of learning outcomes defined for the class (module)* |  |
| 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 |

* 1. **CONTENT CURRICULUM (filled by the coordinator)**

**Lectures A.**

* + 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

* + 1. Microsoft Excel spreadsheet. Data entry and formulas.

**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) |

* 1. **TEACHING METHODS**

# Lecture with multimedia presentation, practical seminars in the computer room.

1. **METHODS AND EVALUATION CRITERIA**
   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 test  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

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

Hours / student work

Activity

|  |  |
| --- | --- |
| 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 |

1. **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. 2nd edition, Elsevier

Acceptance Unit Manager or authorized person