Ministry of Education and Science of the Kyrgyz Republic

Government-run Educational Institution of Higher Professional Education
Kyrgyz-Russian Slavic University
School of Medicine

ENDORSED BY
Vice-rector, Prof
Anes Zarifyan
28.02
2023 y.

Medical informatics

Course Outline (Module)

Assigned to the department of	**Physics, Medical Informatics and Biology**
Academic Curriculum	560001 – KR General Medicine (for foreign students)
Qualification	**Specialist**
Mode of Study	**Intramural**
Total Credit Value	3 credit point
Course Hours	108
Semesters:	
including:	
in-class learning	72,3
individual work	35,7

cope of Testing

credit 3

Course Hours Scheduling (per semester)

Semester Academic Year	**3(2.1)**		**Total**	
Weeks	19			
Type of Training	EP	WP	EP	WP
Lectures	18	18	18	18
Practical Session	54	54	54	54
Face-to-face Learning during the period of theoretical training	0,3	0,3	0,3	0,3
Including interactive	4	4	4	4
Total in class Session	72	72	72	72
Face-to-face Learning	72,3	72,3	72,3	72,3
Individual work	35,7	35,7	35,7	35,7
Total	108	108	108	108

The Course outline developed by:
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Reviewers:

Doctor of medical sciences, professor, Institute of Mountain Physiology and Medicine of the National Academy of Sciences Kyrgyz Republic chief researcher Shanazarov A. S.

Candidate of biological sciences, associated professor of the department of Department of Physics, Medical Informatics and Biology Sorokin A. A.

The Course Outline
Medical informatics

in accordance with Academic Curriculum:
Specialty 560001 - KR – General Medicine (for foreign students)
confirmed by KRSU board of academics in 28.02.2023 y. record № 7

The Course Outline endorsed by
Physics, Medical Informatics and Biology Department Meeting

Record of 29.03.2023 y. № 8
Valid for: 2023-2027 academic years
The Head of Department, Candidate of Biological Sciences, associated professor Karaeva R.R.

Визирование РПД для исполнения в очередном учебном году

Председатель УМС

__ _____ 2024 г.

Рабочая программа пересмотрена, обсуждена и одобрена для исполнения в 2024-2025 учебном году на заседании кафедры
Физики, медицинской информатики и биологии

Протокол от 26 08 2024 г. № 1
Зав. кафедрой к.ф-м.н., доцент Кондратьева Е.И.

Визирование РПД для исполнения в очередном учебном году

Председатель УМС

__ _____ 2025 г.

Рабочая программа пересмотрена, обсуждена и одобрена для исполнения в 2025-2026 учебном году на заседании кафедры
Физики, медицинской информатики и биологии

Протокол от 19 09 2025 г. № 2
Зав. кафедрой к.ф-м.н., доцент Кондратьева Е.И.

Визирование РПД для исполнения в очередном учебном году

Председатель УМС

__ _____ 2026 г.

Рабочая программа пересмотрена, обсуждена и одобрена для исполнения в 2026-2027 учебном году на заседании кафедры
Физики, медицинской информатики и биологии

Протокол от __ _____ 2026 г. № __
Зав. кафедрой к.ф-м.н., доцент Кондратьева Е.И.

Визирование РПД для исполнения в очередном учебном году

Председатель УМС

__ _____ 2027 г.

Рабочая программа пересмотрена, обсуждена и одобрена для исполнения в 2027-2028 учебном году на заседании кафедры
Физики, медицинской информатики и биологии

Протокол от __ _____ 2027 г. № __
Зав. кафедрой к.ф-м.н., доцент Кондратьева Е.И.

1. COURSE OUTLINE OBJECTIVES	
1.1	Elaboration of common vision of the structure, concepts, methods and techniques of medical informatics for students. To show the simplicity and consistency of the basic computer technologies involved in medicine in order to remove the often-emerging potential barrier of fundamental unknowability for a particular individual of mathematical, statistical or hardware.
1.2	Studying of standard means of computer science for solving medical problems. Development of the ability to compose a plan for the solution and implement it using the chosen methods. Development of the skill of analysis and practical interpretation of the results. Development of the ability to use various kinds of reference materials and manuals, necessary for solving practical problems.

2. PLACE OF THE COURSE IN THE EDUCATIONAL PROGRAM	
Educational Program Units:	Б1.В.ДВ.2
2.1	**Students' Preliminary Training Requirements:**
2.1.1	Physics and mathematics
2.2	**Course Units and Practical Sessions imposing the prior Proficiency:**
2.2.1	Evidence-Based Medicine
2.2.2	Epidemiology
2.2.3	Clinical Pharmacology

3. STUDENTS' COMPETENCIES RESULTING FROM THE COURCE UNIT (MODULE)	
IC-2: able and ready to use information, bibliographic resources and information and communication technologies, taking into account the basic requirements of information security	
Know:	
Level 1	modern information and bibliographic resources
Level 2	basic science medical and biological terminology
Level 3	modern statistical information technologies
Ability:	
Level 1	to find scientific medical and biological information
Level 2	to analyze and systematize the information received
Level 3	work with scientific and technical information, applying in professional activities
Skills:	
Level 1	to working with scientific medical and biological information
Level 2	to assess medical and biological information
Level 3	to interpret the results

Final Students' Competences	
3.1	**Know:**
3.1.1	definition and basic concepts of medical informatics;
3.1.2	structure of medical research;
3.1.3	the concept of signals and the nature of their occurrence;
3.1.4	definition and classification of random variables;
3.1.5	health resources, which you can trust;
3.1.6	basic principles of statistical information processing;

3.1.7	basic methods of using a statistical processing of medical data;
3.1.8	the main points of the analysis of scientific medical data and conclusions on research
3.2	**Ability:**
3.2.1	Find and analyze data obtained from different scientific sources;
3.2.2	create a scientific base in the SPSS application program;
3.2.3	to establish the necessary medical tasks, on the basis of the received medical data;
3.2.4	to analyze and justify the conclusions from the received medical data;
3.2.5	use modern computers for processing medical information;
3.2.6	use different methods of analysis when working with scientific medical data;
3.2.7	analyze the results of experiments;
3.3	**Skills:**
3.3.1	methods of creating a scientific base in the SPSS application program;
3.3.2	methods of formulation the necessary medical and biological tasks, according to the available data;
3.3.3	Theoretical and practical analysis and reasoned conclusions on the medical data obtained;
3.3.4	methods of practical use of modern computers for processing medical information;
3.3.5	the skills of using different methods of analysis when working with scientific medical data;
3.3.6	methods of analyzing new scientific and educational literature, the results of experiments;

4. COURSE (MODULE) STRUCTURE AND CONTENT							
Class Code	**Subject Name /Type of Class/**	**Semester / Academic Year**	**Hours**	**Competencies**	**Literature**	**Literature**	**Notes**
	Subject 1. Creation of medical file in SPSS program. Descriptive statistic of biomedical information.						
1.1	Introduction to medical informatics. Data and information. Data types. Organization of collection and storage of medical data. Lec /	4	4	CCC-1 CCC-7	L1.1 L2.1 E1	0	
1.2	Normal distribution and descriptive statistic /Lec/	4	2	CCC-1 CCC-7	L1.1 L2.1 E1	0	

1.3	Creation of medical file in SPSS program. “Select cases”, “Crosstabs” and “Compute” options for for various manipulations with data /Pr /	4	12	CCC-1 CCC-7	L1.1 L2.1 E1	2	Role-playing game "Doctorpatient" which goal is to show the algorithm of creating a SPSS file.
1.4	Kalmogorov-Smirnov test and descriptive statistic / Pr /	4	6	CCC-1 CCC-7	L1.1 L2.1 E1	2	Collecting of various kinds of information from students, which goal is to give clear examples of normal and abnormal distribution and to show fundamental differences between these.
1.5	Choose and study nosology. Based on the chosen nosology, create a file in SPSS program./Iw/	4	12	CCC-1 CCC-7	L1.1 L2.1 E1	0	
	Subject 2. Comparison of averages.						
2.1	Statistical methods of analysis in clinical trials. Randomized clinical trials. Comparison of averages. / Lec /	4	6	CCC-1 CCC-7	L1.1 L2.1 E1 E3	0	
2.2	Criteria of comparison of averages: t- criteria for related and nonrelated samples, Wilcoxon, Mann-Whitney /Pr/	4	15	CCC-1 CCC-7	L1.1 L2.1 E1 E3	0	Principles of choosing a criterion for comparison of averages. Statistical and clinical significance of the results.

	Subject 3. Correlation coefficient and regression.						
3.1	Statistical methods of analysis in clinical trials. Relationship between health parameters. Regression and medical prognosis /Lec/	4	4	CCC-1 CCC-7	L1.1 L2.1 E1 E3	0	
3.2	Review of medical resources on the Internet. Types of medical scientific publications. /Lec/	4	2	CCC-1 CCC-7	L1.1 L2.1 E1 E3	0	
3.3	Medical information systems. Medical instrument-computer systems. Telemedicine. /Lec/	4	2	CCC-1 CCC-7	L1.1 L2.1 E1	0	
3.4	Correlation coefficient: ScaleScale, Nominal -Nominal, Scale-Nominal. /Pr/	4	12	CCC-1 CCC-7	L1.1 L2.1 E1	0	Principles of choosing a criterion for identifying of relationship between indicators. Interpretation of results.
3.5	Nonlinear regression, multiple linear regression. /Pr/	4	12	CCC-1 CCC-7	L1.1 L2.1 E1	0	Algorithm for building the prognosis. Prognosis reliability estimation.
3.6	Solve all statistical tasks in the file. Interpret the results. /Pr/	4	24	CCC-1 CCC-7	L1.1 L2.1 E1	0	
	Credit with mark	4	3	CCC-1 CCC-7		0	
5. ASSESSMENT FUND							

5.1. Advancement Questions and Assignments

Questions for checking the level of KNOWLEDGE:

- Data and information.
- Types of medical data.
- Biostatistics in clinical trials.
- Normal and abnormal distributions. Descriptive statistics.
- Statistical and clinical significance.
- Zero and alternative hypotheses.
- Comparison of averages.
- Correlation coefficient.
- Medical prognosis.
- Medical databases.
- Medical information systems.
- Reliable medical resources.
- Telemedicine.
- Types of scientific medical publications.

Questions for checking the level of ABILITY and SKILLS:

- Medical database management
- Calculating medical statistics
- Hypothesis testing
- Search for medical information in reliable sources on the given topics. Creating a medical request. - Presentation of medical researches

5.2. Course Papers Themes

The discipline doesn't include writing coursework.

5.3. Assessment Fund

THE SITUATIONAL PROBLEM

You are a cardiologist (endocrinologist, oncologist, infectious disease specialist, neurologist, nephrologist, allergist, etc.) and patients come to you with a certain disease. To write out 12 basic parameters of health, depending on chosen disease. For each parameter, know the reference values. Based on the disease, create a file in the SPSS program and imitate the acceptance and treatment of 40 patients. The list of tasks:

1- How many?
2- Descriptive statistics – 2 tasks.
3- Comparison of averages:
    a. Related samples – 2 tasks
    b. Nonrelated samples – 2 tasks 4- Correlation coefficient:
        a. I type – 1 task
        b. II type – 1 task
        c. III type – 1 task 5- Prognosis:
    a. Nonlinear regression
    b. Multiply liner regression

Control work

Look "Attachment 1"

5.4. List of Assessment Tools

Case task

Control work

Testing

SCALE OF ESTIMATION OF THE CASE TASK (current control) in%:

- Chosen and studied disease. There are 12 basic parameters associated with the disease. - 0-10%
- The SPSS file is created based on the selected disease. - 20%
- Twelve tasks solved in the created file - 20% - Interpretation of results - 50%

All tasks are estimated at 100%, according to the results of solving problems on the topics covered, all% are summed up and the arithmetic mean.

SCALE OF ESTIMATION OF CONTROL WORK (boundary control) in%:

- People are selected, in accordance with the condition of the task - 0-25%
- The rules for the solution of the set tasks are observed - 0-25% - Interpretation of results. - 50%

Each solved problem is estimated at 100%, according to the results of solving all tasks of the test ticket, all% are summed up and the arithmetic mean is found. SCALE OF ASSESSMENT OF TESTS: (intermediate control) in%:

There are 50 questions in one test task. Questions are answered ready to choose, one right and the other wrong. For every correct answer - 2%

All% are summed and the arithmetic mean

SCALE OF ESTIMATION OF THE ORAL SURVEY (intermediate control - "KNOW")

When assessing oral responses to the testing of the level of training "KNOW" the following criteria are taken into account:

- definition and basic concepts of medical informatics;
- the concept of signals and the nature of their occurrence;
- the structure of medical research, the definition of longitudinal and transverse studies;
- definition and classification of random variables;
- basic principles of statistical information processing;
- the main methods of using a particular qualitative statistical processing of medical data;
- the main points of the analysis of scientific medical data and conclusions on research;

85-100% is estimated response, which shows a solid knowledge of the terminology of medical informatics; excellent knowledge of the structure of medical research, distinguishing longitudinal studies from transverse; confidently distinguishes the types of random variables.

70-84% is estimated response, which shows a solid knowledge of the terminology of medical informatics; not sufficiently deep knowledge of the structure of medical research, superficially distinguishing longitudinal and transverse studies; does not reliably distinguish between types of random variables.

60-69% is estimated response, which shows the average knowledge of the terminology of medical informatics; not a deep knowledge of the structure of medical research, weakly distinguishes between longitudinal and transverse studies; weakly distinguishes types of random variables;

SCALE OF ESTIMATION OF ANALYTICAL AND PRACTICAL JOBS

intermediate control - "TO KNOW AND OWN")

When assessing the answers to the level of training TO LEARN and OWN the following criteria are taken into account:

- creation of a medical file in the SPSS program;
- formulation of the medical task;
- testing hypotheses by statistical methods;
- interpretation of results of statistical processing;

- presentation of the results of medical research;
- search for relevant and reliable medical research on the Internet;

6. COURSE (MODULE) METHODOLOGICAL AND INFORMATIONAL SUPPORT

6.1. Recommended Reading

6.1.1. Required Reading List

	Authors, compilers	Title	Book publisher, Year
A1.1	Bernard Rosner	Fundamentals of Biostatistics 8th Edition	2016

6.1.2. Advanced Reading

	Authors, compilers	Title	Book publisher, Year
A2.1	Andy Field	Discovering Statistics Using IBM SPSS Statistics 5th Edition	2018

6.2. Online Resources

E1	https://pubmed.ncbi.nlm.nih.gov/ - statistical reviews 2002 -2018
E2	
E3	

6.3. List of information and educational technologies

6.3.1 Competence-based Educational Technologies

7.3.1.1	To organize the study of the discipline, traditional educational technologies are used, oriented to communicating the knowledge and methods of action that are passed on to the students in the finished form. Lecture material is provided to students using multimedia equipment. Traditional educational technologies include: explanatory-illustrative lecture classes; Explanatory and explanatory practical exercises.
7.3.1.2	Innovative educational technologies, classes in an interactive form, which form the system thinking and the ability to generate ideas when solving various situational problems. Innovative educational technologies include two role-playing games, which are controlled in the form of doing independent work in class.

6.3.2 List of Information Reference Systems and Software

7. COURSE (MODULE) LOGISTICS

7.1	Lecture room for 150 seats.
7.2	A computer class for 20 seats for practical classes and for students to do their own work with connection to the Internet.
7.3	Multimedia complex (laptop, projector).
7.4	Marker and multimedia boards.

8. COURSE (MODULE) PROFICIENCY METHODICAL GLUIDELINES (FOR STUDENT)

Technological chart of the discipline is in Attachment 3

Methodical recommendations for independent out-of-class work of students on studying the discipline "Medical Informatics". (Attachment 2)

The study of the theoretical part of the discipline is designed not only to deepen and consolidate the knowledge gained in the classroom, but also to promote the development of students' creative skills, initiative and organization of their free time.

Self-study of a student in the study of discipline includes:

- reading recommended literature;
- viewing of Internet resources;
- read lectures to prepare for practices;
- the file creation;

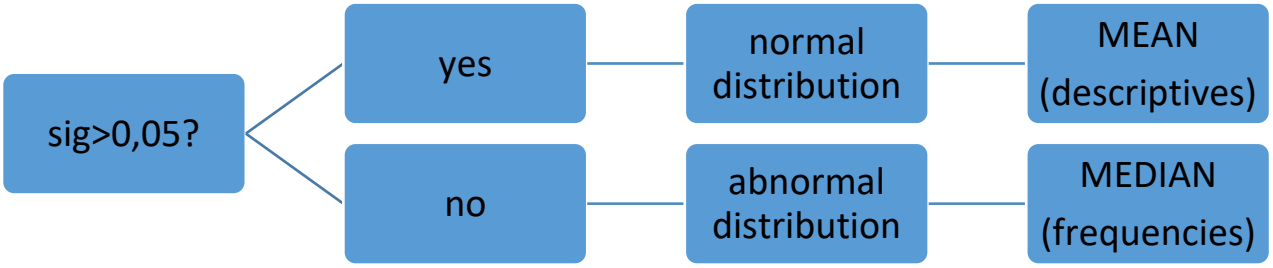
The FILE creation recommendations:

- Install “SPSS16Full” program on your computer; - Use the instructions received in the first practice; - Choose one of the following diseases:
    1. Brain abscess
    2. Acromegaly
    3. Acidosis
    4. Alzheimer's disease
    5. Aplastic anemia
    6. Iron-deficiency anemia
    7. Infertility
    8. Bronchial asthma
    9. Bronchitis
    10. Bronchoectatic disease
    11. Sjogren's disease
    12. Hemorrhagic stroke
    13. Ischemic stroke
    14. Hydrocephalus
    15. Glomerulonephritis
    16. Goiter
    17. Measles
    18. Rubella
    19. Leukemia
    20. Pneumonia
    21. Gout
    22. Rheumatism
    23. Systemic lupus erythematosus
    24. Tuberculosis
    25. Cirrhosis
    26. Osteoarthritis
    27. Eczema

SOLVING PRACTICAL TASKS:

Topic: Descriptive statistics

Analyze => Nonparametric tests => 1-Samples K-S



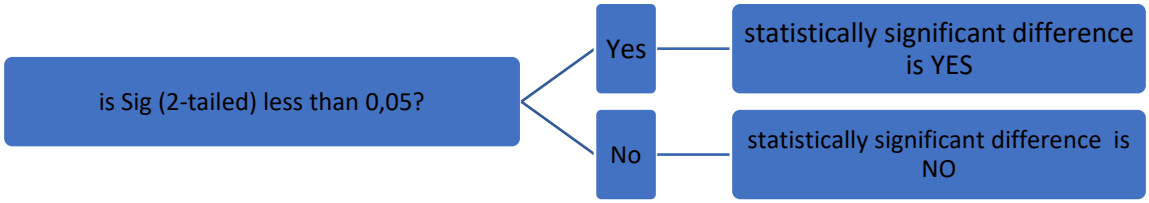
Topic: Comparison of averages

In order to solve the problem of comparing the averages, it is necessary to answer three questions:

1. What is the criterion for making a comparison?

№	Distribution	Relationship	Criteria	Test
1	Normal	Yes	t-criteria for related samples	Pared-Samples t-test
2	Normal	No	t-criteria for independent samples	Independent samples t-test*
3	Abnormal	Yes	Wilcoxon	2-Related Samples
4	Abnormal	No	Mann-Whitney	2-Independent Samples

2. Is there statistically significant difference between the averages?



3. Is there clinically significant difference between the averages?

- T-criteria: you should find averages;
- Wilcoxon: you should add quartiles in 2-Related samples test and then find medians
- Mann-Whitney: you should separately calculate the medians after 2-Independent Samples test

***Independent samples t-test**

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
ies before t	Equal variances assumed	2.350	.132 (1)	-1.603	50	.115 (2)	-.2595
	Equal variances not assumed			-1.642	48.820	.107	-.2595

At first you should look at the Levene's Sig **(1):**

- If it is more than 0.05, you should look at the top Sig (2-tailed) **(2);**
- If it is less than 0.05, you should look at the bottom Sig (2-tailed) **(2);**

Topic: Correlation coefficient

There are three types of tasks:
I – scale-scale;
II – nominal-nominal; ordinal-ordinal; nominal-ordinal;
III – scale-nominal or scale-ordinal.

I TYPE

Is there relationship between systolic blood pressure and low density lipoprotein?
You must answer four questions to solve this problem:

1. **What criteria should you use to calculate correlation coefficient?**

2. **Is there statistically significant relationship between indicators?**
   Sig of Pearson or Spearman is probability of random correlation.
   Sig (2-tailed)>0,05 – NO
   Sig (2-tailed)<0,05 – YES

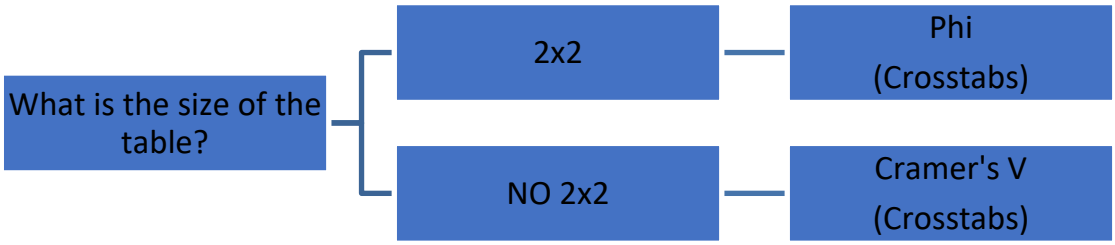
3. **How strong is the relationship?**
   1.00 – perfect relationship
   0.70 to 0.99 – strong relationship
   0.50 to 0.69 – good relationship
   0.30 to 0.49 – moderate relationship
   0.29 and less – poor relationship
   0.00 – no relationship

4. **What is direction of the relationship?**
   Positive coefficient (+r) – direct relationship *(with an increase (decrease) in one indicator, we see an increase (decrease) in the other)*;
   Negative coefficient (-r) – inverse relationship *(with an increase (decrease) in one indicator, we see a decrease (increase)*;

II TYPE

Is there relationship between sex and type of diabetes?
You must answer four questions to solve this problem:

1. **What criterion should you look at?**



2. **Is there statistically significant relationship between indicators?**
   Sig of Phi or Cramer is probability of random correlation.
   Sig>0,05 – NO
   Sig <0,05 – YES

3. **How strong is the relationship?**
   1.00 – perfect relationship
   0.70 to 0.99 – strong relationship
   0.50 to 0.69 – good relationship
   0.30 to 0.49 – moderate relationship
   0.29 and less – poor relationship
   0.00 – no relationship

What is the meaning of communication?

Attachment 1

I	
1	How many smoking males over 60?
2	Calculate descriptive statistics for systolic blood pressure.
3	Is the difference between systolic blood pressure before and after treatment in people with essential hypertension stage 1?
4	Is the difference between smoking males and females in terms of systolic blood pressure?
II	
1	How many smokers over 60 with essential hypertension stage 1?
2	Calculate descriptive statistics for total cholesterol.
3	Is the difference between diastolic blood pressure before and after treatment in people with essential hypertension stage 2?
4	Is the difference between males and females with essential hypertension stage 1 in terms of diastolic blood pressure?
III	
1	How many nonsmoking males with renovascular hypertension?
2	Calculate descriptive statistics for serum sugar.
3	Is the difference between mass index of left ventricular myocardium before and after treatment in people with essential renovascular hypertension?
4	Is the difference between smokers and nonsmokers with renovascular hypertension in terms of diastolic blood pressure?
IV	
1	How many smoking females with renovascular hypertension?
2	Calculate descriptive statistics for low density lipoprotein.
3	Is the difference between mass index of left ventricular myocardium before and after treatment in people over 70?
4	Is the difference between smokers and nonsmokers with renovascular hypertension in terms of urine albumin?
V	
1	How many females with renovascular hypertension and total cholesterol over 6,2?
2	Calculate descriptive statistics for glomerular filtration rate.
3	Is the difference between systolic blood pressure before and after treatment in nonsmokers?
4	Is the difference between smokers and nonsmokers with renoprival hypertension in terms of systolic blood pressure after treatment?
VI	
1	How many nonsmoking males with serum sugar over 5,5?
2	Calculate descriptive statistics for urine creatinine.
3	Is the difference between systolic blood pressure before and after treatment in smokers?
4	Is the difference between smoking people with essential hypertension stage 1 and essential hypertension stage 2 in terms of systolic blood pressure after treatment?

VII	
1	How many smoking females with serum sugar less than 5,5?
2	Calculate descriptive statistics for high density lipoprotein.
3	Is the difference between systolic blood pressure before and after treatment in people with
	total cholesterol over 6,2?
4	Is the difference between smokers and nonsmokers with renovascular hypertension in terms of diastolic blood pressure?

№1	
Open diabetes file. Is there relationship between:	
1	systolic blood pressure before and after treatment
2	sex and type of diabetes
3	systolic blood pressure before and type of diabetes
№2	
Open diabetes file. Is there relationship between:	
1	body mass index before treatment and polyuria before treatment
2	polydipsia after treatment and type of diabetes
3	body mass index before treatment and type of diabetes
№3	
Open diabetes file. Is there relationship between:	
1	body mass index before treatment and blood plasma glucose before treatment
2	polydipsia after treatment and ketonuria after treatment
3	total cholesterol before treatment and type of diabetes
№4	
Open diabetes file. Is there relationship between:	
1	glycosylated hemoglobin before treatment and blood plasma glucose before treatment
2	glucosuria after treatment and ketonuria after treatment
3	diastolic blood pressure before treatment and type of diabetes
№5	
Open diabetes file. Is there relationship between:	
1	glycosylated hemoglobin before treatment and after treatment
2	glucosuria after treatment and polydipsia after treatment
3	diastolic blood pressure after treatment and type of diabetes
№6	
Open diabetes file. Is there relationship between:	
1	blood plasma glucose before treatment and after treatment
2	glucosuria after treatment and type of diabetes
3	blood plasma glucose after treatment and glucosuria after treatment
№7	
Open diabetes file. Is there relationship between:	
1	blood plasma glucose before treatment and polyuria before treatment

2	ketonuria after treatment and type of diabetes
3	body mass index after treatment and ketonuria after treatment

Attachment 2

KYRGYZ-RUSSIAN SLAVIC UNIVERSITY
MEDICAL FACULTY
DEPARTMENT OF PHYSICS MEDICAL INFORMATICS AND BIOLOGY

REPORT
on the performance of the student's independent work in medical informatics
Theme of I/w:
_____

Name: _____
Group: _____
Lecturer: _____

Bishkek 2020

Tutorial

!!! Important. Without a database (* .sav) or output files (* .spv), the report will not be valid.

! For correct implementation, we advise you to study the report on the example of hypertension.

DATABASE (*.sav)

Write an abstract on your topic. The volume of the abstract is 1 sheet. The source of information can be: scientific articles from PubMED (https://pubmed.ncbi.nlm.nih.gov/), information from official sources such as the CDC (https://www.cdc.gov), WHO (https://www.who.int/), etc. The list of references should contain at least 10 sources. See the task performed on the example of "hypertension".

On the basis of the abstract, write out twelve (as many as possible) indicators (parameters) of health and add them to the table "parameters". All parameters should be related to the disease being described, therefore, appropriate references to these parameters should be in the description. Select 1 or 2 main indicators (for example, for hypertension, these are SBP and DBP) and additionally create indicators after treatment. The type of measurement (measure) of at least one of the main indicators must be scale, otherwise it will be impossible to make a comparison with related samples. Among the 12 parameters, there should be 2-3 parameters of the nominal or ordinal type, otherwise it will not be possible to solve the problem of calculating the correlation coefficient of the 2nd type.

Add 40 patients in your SPSS file.

OUTPUTFILE1 (*.spv)

!!! Important. The task condition must be formulated correctly, otherwise the task will not be counted.

"How many" - the problem is solved using Select cases + Frequencies. The use of alternative solutions is unacceptable;

Descriptive statistics 1 - task without additional condition;

Descriptive statistics 2 - problem with an additional condition.

OUTPUTFILE2 (*.spv) и **OUTPUTFILE3 (*.spv)**

In the “significance” column, indicate the statistical significance level of the result: P> 0.05 - no significance, P <0.05 - acceptable significance, P <0.001 - very high significance:

- ✓ Question 1: What is criterion for making a comparison?
- ✓ Question 2: Is there statistically significant difference?
- ✓ Question 3: Is there clinically significant difference?

OUTPUTFILE4 (*.spv)

Type I

- ✓ Question 1: What is criterion?
- ✓ Question 2: Is there relationship?
- ✓ Question 3: How strong is the relationship?
- ✓ Question 4: What is direction of the relationship?

Type II and III

- ✓ Question 1: What is criterion?
- ✓ Question 2: Is there relationship?
- ✓ Question 3: How strong is the relationship?
- ✓ Question 4: What is the meaning of relationship?

DATABASE - patient database
Abstract:

Parameters (health indicators):				
№	Name	Value	Ranges	Measure
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

OUTPUTFILE1 – "how many" and "descriptive statistics"
How many?
Task:
Answer:
Descriptive statistics 1
Task:
Answer:
Descriptive statistics 2
Task:
Answer:

OUTPUTFILE2 – "comparison of averages with related samples"			
Comparison of averages 1			
Task:			
Answer:			
		Criterion	Significance
Question 1:			
Question 2:			
Question 3:			
Comparison of averages 2			
Task:			
Answer:			
		Criterion	Significance
Question 1:			
Question 2:			
Question 3:			

OUTPUTFILE3 – "comparison of averages with nonrelated samples"			
Comparison of averages 1			
Task:			
Answer:			
		Criterion	Significance
Question 1:			
Question 2:			
Question 3:			
Comparison of averages 2			
Task:			
Answer:			
		Criterion	Significance

Question 1:
Question 2:
Question 3:

OUTPUTFILE3 – "correlation coefficient"			
type I (scale-scale)			
Task:			
Answer:			
Parameters	Criterion	r	Significance
Question 1:			
Question 2:			
Question 3:			
Question 4:			
type II (nominal-nominal, ordinal-ordinal, nominal-ordinal)			
Task:			
Answer:			
Parameters	Criterion	r	Significance
Question 1:			
Question 2:			
Question 3:			
Question 4:			
type III (scale-nominal, scale-ordinal)			
Task:			
Category	**Scale indicator**		
Answer:			
Parameters	Criterion	r	Significance
Question 1:			
Question 2:			
Question 3:			
Question 4:			

Attachment 3

The planning sheet of medical informatics

Title of module according to WPD	Type of control	Forms of control	Minimal credit points	Maximal credit points	Week of control
Module 1					
Module 1. Creation of medical file in SPSS program. Descriptive statistic of biomedical information.	Formative assessment	Activity, attendance, lecture notes, performance and presentation of lab works, individual work with tables, discussion of situational tasks	10	20	27
	Midterm examination	Evaluation test	4,5	7,5	
Module 2					
Module 2. Comparison of averages.	Formative assessment	Activity, attendance, lecture notes, performance and presentation of lab works, individual work with tables, discussion of situational tasks, writing of reports	6	10	32
	Midterm examination	Evaluation test	6	10	
Module 3					
Module 3. Correlation coefficient and regression.	Formative assessment	Activity, attendance, lecture notes, performance and presentation of lab works, individual work with tables, discussion of situational tasks, reports	7,5	12,5	38
	Midterm examination	Tests	6	10	
Total			40	70	39
Midpoint assessment			20	30	
Summative assessment			60	100	