ASSESSMENT FUND

Course Outline «Medical informatics»

Level of higher education

SPECIALIST

Academic Curriculum

560001 – KR General Medicine

(code and name of the training area)

Qualification

General Medicine

2025

1. LIST OF COMPETENCIES, INDICATING STAGES OF THEIR FORMATION DURING THE PROCESS OF MASTERING THE DISCIPLINE

Competencies	Planned learning outcomes in the discipline, characterizing the stages of competencies formation	Types of assessment tools/ section code in this document
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:** - modern information and bibliographic resources; - basic science medical and biological terminology; - modern statistical information technologies	**Block A, D –** reproductive level tasks - test;
	Ability: - to find scientific medical and biological information; - to analyze and systematize the information received; - work with scientific and technical information, applying in professional activities	**Block B, D –** reproductive level tasks - problems solving; - control work
	Skills: - to working with scientific medical and biological information; - to assess medical and biological information; - to interpret the results.	**Blok C, D -** practice-oriented and/or research level assignments - report

2. TECHNOLOGICAL MAP OF DISCIPLINE

Technological map of discipline «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					
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	11	21	6
	Midterm examination	Evaluation test	6	9	
Module 2					
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	4	8	11
	Midterm examination	Evaluation test	8	12	
Module 3					
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	3	6	15
	Midterm examination	Tests	8	14	
Total			40	70	
Midpoint assessment			20	30	
Summative assessment			60	100	

3. STANDARD CONTROL TASKS AND OTHER MATERIALS FOR EVALUATION OF DISCIPLINE TRAINING PLANNED RESULTS / PRACTICE (ASSESSMENT TOOLS)

Block A

A. 1. Survey questions
Topic 1. Basic concepts of medical informatics.
1.1. How is information transmitted?
a) sounds;
b) signals;
c) pictures;
d) channels;
e) messages;
1.2. List the main properties of information:
a) objectivity, subjectivity, reliability, completeness, relevance, adequacy, accessibility, usefulness;
b) usefulness, value, understandability, security, unambiguity, truthfulness, completeness, timeliness, accessibility;
c) value, brevity, ergonomics, timeliness, objectivity, accuracy, relevance, truthfulness;
d) accessibility, understandability, relevance, value, brevity, accuracy, timeliness, relevance, completeness;
e) accuracy, understandability, value, relevance, accessibility, brevity, timeliness, unambiguity;
Define what is called the science of obtaining, processing, distributing, storing, transmitting and presenting medical information based on computer technology?
a) medical informatics;
b) economic informatics;
c) social informatics;
d) political science informatics;
e) mathematical computer science;

Topic 2: SPSS Overview. Creating and editing a file.
2.1. List the main tabs that make up the data editor?
a) data view;
b) variable view;
c)scale;
d) nominal;
e) ordinal;
2.2. Specify the column in which the name of the new variable is specified -
a) name;
b) decimals;
c)type;
d)width;

e) label;
2.3. Specify which sign is used when entering decimal data into the data file -
a) comma;
b) point;
c) semicolon;
d) colon;
e) space;

Topic 3. Descriptive statistics.
3.1. Determine the names of the various calculated indicators that characterize the distribution of variable values?
a) descriptive statistics;
b) descriptive tables;
c) comparative statistics;
d) correlation statistics;
e) regression statistics;
3.2. Determine what is the sum of all values in a distribution divided by their number called?
a) average;
b) median;
c) minimum;
d) maximum;
e) dispersion;
3.3. Determine the name of a variable that, as a result of testing, depending on the case, takes one of its possible many values?
a) random variable;
b) qualitative quantity;
c) quantitative value;
d) relative magnitude;
e) absolute value;

Topic 4. Comparative statistics.
4.1. Determine in what case, when applying the Kolmogorov-Smirnov test, they say that a variable is distributed according to a normal law?
a) sig>0.05;
b) sig<0.05;
c) sig≤0.05;
d) sig=0.05;
e) sig≥0.05;
4.2. Determine which test will be used to solve the following problem: are there differences between the average blood sugar values before treatment in women and men, if the blood sugar variable for both groups follows a normal distribution?
a) Independent-Samples T Test;
b) Paired-Samples T Test;
c) 2 Independent Samples;

d) 2 Related Samples;
e) 1-Sample K-S;
4.3. Determine which problem is incorrect, that is, there is no point in solving it?
a) are there differences between the mean values of systolic pressure before treatment and diastolic pressure after treatment;
b) are there differences between the average blood sugar values before and after treatment in women over 40 years of age;
c) are there differences between the mean hemoglobin values before and after treatment in non-smoking patients;
d) are there differences between the mean values of systolic blood pressure before and after treatment in women;
e) whether there are differences between the mean values of urine sugar before and after treatment in smoking men under 35 years of age;
Topic 5. Correlation statistics.
5.1. Determine what the correlation dependence reflects?
a) relationships between variables;
b) cause-and-effect relationships;
c) relationships between groups;
d) cause-and-effect analysis;
e) changes between groups;
5.2. What are the tests for calculating correlation dependence?
a) Pearson test;
b) Spearman test;
c) Kendall's test;
d) Kolmagorov test;
e) Student test;
5.3. What are the three main questions that correlation analysis answers?
a) is there a relationship between the variables?
b) what is the strength of the relationship between the variables?
c) what is the nature of the relationship between the variables?;
d) what is the reason for the relationship between the variables?
e) whether there is a relationship between groups of variables;

A.2. Questions for midterm control
Module 1. Descriptive methods of statistical processing of medical and biological information.
Topic 1. Basic concepts of medical informatics.
1.1. What is information? Its types.
1.2. Basic properties of information.
1.3. Interaction of medical informatics with other sciences.
1.4. Goals of medical informatics.
1.5. Subject of the discipline of medical informatics.

Topic 2. Basic concepts of medical statistics.
2.1. Basic concepts of medical statistics.

2.2. Subjects and tasks of medical statistics.
2.3. Stages of research.
2.4. Types of research.
2.5. Hypothesis. Significance. Probability.

Topic 3. Descriptive statistics.
3.1. The purpose and objectives of descriptive statistics.
3.2. The concept of descriptive statistics.
3.3. Distribution of a random variable.
3.4. Average and deviation from average.
3.5. Quartiles. Median.

Module 2. Comparative methods of statistical processing of medical and biological information.
Topic 1. Comparison of averages. Paired Student's t-test and non-paired t-test.
1.1. The purpose and objectives of comparative statistics.
1.2. Samples. Hypotheses.
1.3. Distribution of a random variable.
1.4. Features of the application of these criteria.

Topic 2. Comparison of averages. Paired Wilcoxon test and unpaired Mann-Whitney test.
2.1. The purpose and objectives of comparative statistics.
2.2. Samples. Hypotheses.
2.3. Distribution of a random variable.
2.4. Features of the application of these criteria.

Module 3. Correlation methods for statistical processing of medical and biological information.
Topic 1: Scale-Scale Correlation. Correlation Nominal-Nominal, Ordinal-Ordinal, Nominal-Ordinal.
1.1. Goals of correlation statistics.
1.2. Problems of correlation statistics.
1.3. The fundamental difference between Scale-Scale correlation and Nominal-Nominal, Ordinal-Ordinal, Nominal-Ordinal correlation.

Topic 2. Correlation Scale-Nominal, Scale-Ordinal.
2.1. Stages of this correlation analysis.
2.2. Features of recoding the Scale variable into the Ordinal variable.

Block B

IN 1. Typical tasks.

Topic 3. Descriptive statistics.

3.1. Task

Count how many men in the file are over 70 years old diagnosed with renovascular hypertension?

3.2. Task

Calculate descriptive statistics for the variable systolic pressure before treatment in women smokers over 30 years of age.

3.3. Task

Calculate descriptive statistics for the variable urine albumin per day in smokers diagnosed with stage 1 essential hypertension.

Topic 7. Comparison of averages. Paired Student's t-test

7.1. Task

Determine whether there are differences between “systolic pressure before” and “systolic pressure after treatment” in patients over 60 years of age?

7.2. Task

To determine whether there are differences between the indicators “diastolic pressure before treatment” and “diastolic pressure after treatment” in women diagnosed with essential hypertension of the 2nd degree?

7.3. Task

To determine whether there are differences between the indicators “left ventricular myocardial mass index before treatment” and “left ventricular myocardial mass index after treatment” in non-smoking men?

Topic 12. Scale-Scale Correlation.

12.1. Task

Determine whether there is a relationship between the indicators “urine creatinine” and “intima-media thickness”?

12.2. Task

To determine whether there is a relationship between the indicators “left ventricular myocardial mass index before treatment” and “left ventricular myocardial mass index after treatment”?

12.3. Task

Determine whether there is a relationship between the indicators “systolic pressure before treatment” and “triglycerides before treatment”?

Block C

C.2 Individual creative tasks

Topics of SRS abstracts on medical informatics.

- Brain abscess
- Acromegaly
- Albinism
- Aplastic anemia
- Alzheimer's disease
- Kawasaki disease
- Hodgkin's disease
- Bronchiectasis

- Sinusitis
- Hemorrhagic vasculitis
- Iron deficiency
- Cholelithiasis
- Infectious mononucleosis
- Ischemic stroke
- Measles
- Rubella
- Burkitt's lymphoma
- Lymphosarcoma
- Dengue fever
- Melanoma
- Multiple myeloma
- Cystic fibrosis
- Osteoarthritis
- Acute pneumonia
- Pyodermatitis
- Gout
- Rheumatism
- Erysipelas
- Sarcoidosis
- Sharpe's syndrome
- Systemic lupus erythematosus
- Tuberculosis
- Nodular goiter
- Cirrhosis of the liver
- Cytomegalovirus infection
- Eczema

Block D

List of questions and tasks for intermediate certification (test with assessment):

Questions to check the level of training KNOW:

1. The concept of information.
2. Types of information.
3. Signal. The nature of its occurrence.
4. Types of information perception.
5. Basic properties of information.
6. Basic concepts of medical informatics.
7. Goals of medical informatics.
8. Problems of medical informatics.
9. Sources of medical information.
10. Types of medical information.
11. Subject and objectives of medical statistics.
12. The meaning of medical statistics.
13. Medical research statistics.
14. Stages of research.
15. Types of research.
16. Hypothesis.
17. Probability.
18. Magnitude.
19. Classification of quantities.
20. Main stages of statistical data processing.
21. Statistical observation.
22. Adolphe-Quetelet rules.
23. Grouping and summarizing data.
24. Objectives of descriptive statistics.

25. Algorithm for calculating descriptive statistics.
26. Law of distribution of a random variable.
27. Quartiles. Percentiles.
28. Objectives of comparative statistics.
29. Algorithm for calculating comparative statistics.
30. Goals of correlation statistics.
31. Algorithm for calculating correlation statistics.
32. Visual presentation of information.

Questions to check your level of training BE ABLE TO:

1. Provide a graphical interpretation of the information transfer model.
2. Give a comparative analysis of useful and not useful information.
3. Reveal the essence of the concept of information properties.
4. Present a graphical diagram of the interaction between computer science and medicine.
5. Identify the differences between alphanumeric information and visual information.
6. Identify the differences between alphanumeric information and audio information.
7. Provide a comparative analysis of traditional and modern sources of medical information.
8. Present a graphical diagram of numeric data types.
9. Present a graphical diagram of categorical data types.
10. Reveal the essence of the concept of medical statistics.
11. Present a graphical interpretation of a cross-sectional study.
12. Present a graphical interpretation of a longitudinal study.
13. Provide a graphical interpretation of a retrospective study.
14. Provide a graphical interpretation of a prospective study.
15. Identify the differences between the null and alternative hypotheses.
16. Identify differences between related and unrelated samples.
17. Identify the differences between absolute and random variables.
18. Identify the differences between absolute and relative values.
19. Reveal the essence of the concept of statistical observation.
20. Present a graphical diagram of the algorithm for calculating descriptive statistics.
21. Present a graphical interpretation of Gauss's law.
22. Provide a graphical interpretation of percentiles and quartiles.
23. Identify the features of calculating descriptive statistics, depending on the law of distribution of a random variable.
24. Present a graphical diagram of the algorithm for calculating comparative statistics.
25. Identify the features of calculating comparative statistics, depending on the distribution law of the random variable and the sample.
26. Present a graphical diagram of the algorithm for calculating correlation statistics.
27. Identify the features of calculating correlation statistics, depending on the type of data.
28. Provide an annotation on the issued nosology.
29. Select in the table the main laboratory indicators for the given nosology.

Вопросы для проверки уровня обученности ВЛАДЕТЬ:

task 1.

Match the parameters to the measurement type. Please select a match for all 5 answer options:

a) scale;
b) ordinal;
c) nominal;

__ sex;
__ age;
__ leukocytes;
__ Sbp;
__ stage of disease;

Task 2.

Match the parameters to the measurement type. Please select a match for all 5 answer options:

a) scale;
b) ordinal;
c) nominal;

__ sex;
__ age;
__ sugar;
__ urine sugar;
__ stage of desease;

Task 3.

Match the parameters to the measurement type. Please select a match for all 5 answer options:

a) scale;
b) ordinal;
c) nominal;

__ sex;
__ age;
__ class;
__ average mark;
__ hobby;

Task 4.

The file contains three parameters: - age; - gender (1 - woman; 2 - man); - stage of the disease (1 - mild; 2 - moderate; 3 - severe). Objective: Select women with moderate to severe disease.

a) gender = 1 & disease stage = 2 | gender = 1 & disease stage = 3;

b) gender = 1 | disease stage = 2 & gender = 1 | disease stage = 3;

c) gender = 1 & disease stage = 2 | disease stage = 3;

d) gender = 1 | disease stage = 2 | disease stage = 3;

e) gender = 1 & disease stage = 2 & disease stage = 3;

Task 5.

The file contains two parameters: - gender (1 - woman; 2 - man); - LVMI (left ventricular myocardial mass index). Left ventricular hypertrophy of the heart is diagnosed in women if LVMI is more than 150 g, and in men if LVMI is more than 180 g. The task is to select all people with left ventricular hypertrophy.

a) sex = 1 & LVMI > 150 | gender = 2 & LVMI > 180;

b) gender = 1 | LVMI > 150 | gender = 2 | LVMI > 180;

c) gender = 1 | gender = 2 | LVMI > 150 & LVMI > 180;

d) gender = 1 | LVMI > 150 & gender = 2 | LVMI > 180;
e) gender = 1 & LVMI > 180 & gender = 2 & LVMI > 150;
Task 6.
The file contains three parameters: - age; - gender (1 - girl; 2 - boy); - hobby (1 - sports; 2 - computer; 3 - art). The task is to select girls over 13 years old who have chosen art as a hobby.
a) gender = 1 & age > 13 & hobbies = 3;
b) gender = 1 & age < 13 & hobbies = 1;
c) gender = 2 & age = 13 & hobbies = 2;
d) gender = 2 & age > 13 & hobbies = 2;
e) gender = 1 & age = 13 & hobbies = 3;
Task 7.
Will you choose an algorithm that will help solve the following problem: Calculate descriptive statistics for the age variable among male smokers?
a) we select smoking men, check their age for compliance with Gauss's law, if it corresponds to the law, we find the min, max, mean and standard deviation, if it does not correspond, then we find the quartiles and median;
b) we select smoking men, check the age for compliance with Gauss's law, if it corresponds to the law, we find the quartiles and median, if it does not correspond, then we find the min, max, mean and standard deviation;
c) we select smokers, check the gender for compliance with Gauss's law, if it corresponds to the law, we find quartiles and median, if it does not correspond, then we find min, max, mean and standard deviation;
d) we select men, check smoking for compliance with Gauss's law, if it corresponds to the law, we find quartiles and median, if it does not correspond, then we find min, max, mean and standard deviation;
e) we select men, check the age for compliance with Gauss's law, if it corresponds to the law, we find the quartiles and median, if it does not correspond, then we find the min, max, mean and standard deviation;
Task 8.

Determine whether the systolic blood pressure after treatment corresponds to Gauss's law?

		систолическое артериальное давление после лечения
N		100
Normal Parameters[a]	Mean	151,61
	Std. Deviation	16,862
Most Extreme Differences	Absolute	,124
	Positive	,124
	Negative	-,097
Kolmogorov-Smirnov Z		1,244
Asymp. Sig. (2-tailed)		,090

a) corresponds to Gauss's law, since Asymp. Sig. (2-tailed) > 0.05;
b) does not correspond to Gauss's law, since Negativ < 0.05;

c) does not correspond to Gauss's law, since Asymp. Sig. (2-tailed) < 0.05;

d) corresponds to Gauss's law, since Mean=151.61 >0.05;

e) corresponds to Gauss's law, since Std. Deviation=16.862 > 0.05;

Task 9.

Determine whether the high-density lipoprotein indicator before treatment corresponds to Gauss's law?

One-Sample Kolmogorov-Smirnov Test

		systolic blood pressure after treatment
N		100
Normal Parameters[a]	Mean	151,61
	Std. Deviation	16,862
Most Extreme Differences	Absolute	,124
	Positive	,124
	Negative	-,097
Kolmogorov-Smirnov Z		1,244
Asymp. Sig. (2-tailed)		,090

a. Test distribution is Normal.

a) does not correspond to Gauss's law, since Asymp. Sig. (2-tailed) < 0.05;

b) corresponds to Gauss's law, since Asymp. Sig. (2-tailed) > 0.05;

c) does not correspond to Gauss's law, since Negativ < 0.05;

d) corresponds to Gauss's law, since Mean=0.957 >0.05;

e) corresponds to Gauss's law, since Std. Deviation=0.736 > 0.05;

Task 10.

Select which descriptive statistics were obtained for urine creatinine?

N	Valid	100
	Missing	2
Percentiles	25	3,100
	50	4,200
	75	6,175

a) 4,2 (3,1;6,175);
b) 3,1(4,2; 6,175);
c) 4,2 (6,175; 3,1);
d) 4,2; 6,175;
e) 4,2; 3,100;

Task 11.

Select what is the arithmetic mean of serum creatinine?

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
serum creatinine	100	50,0	150,0	108,710	2,4751	24,7506
Valid N (listwise)	100					

a) 108,71;
b) (50+150)/2=100;
c) 2,475;

d) 24,751;
e) 100;

Task 12.

Are there differences in the average systolic blood pressure after treatment in people with first and second degree essential hypertension?

Group Statistics

	diagnosis	N	Mean	Std. Deviation	Std. Error Mean
systolic blood pressure after treatment	essential hypertension stage 1	25	136,72	15,252	3,050
	essential hypertension stage 2	23	150,17	10,861	2,265

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
systolic blood pressure after treatment	Equal variances assumed	1,709	,198	-3,492	46	,001	-13,454	3,852	-21,209	-5,699
	Equal variances not assumed			-3,541	43,374	,001	-13,454	3,799	-21,114	-5,794

a) in patients diagnosed with essential hypertension of the 1st degree, the average value of systolic pressure after treatment is statistically significantly lower than in patients diagnosed with essential hypertension of the 2nd degree, since Sig = 0.034, this is less than 0.05;

b) in patients diagnosed with essential hypertension of the 2nd degree, the average value of systolic pressure after treatment is statistically significantly lower than in patients diagnosed with essential hypertension of the 1st degree, since Sig = 0.034, this is less than 0.05;

c) in patients diagnosed with essential hypertension of the 2nd degree, the average value of systolic pressure after treatment is statistically significantly lower than in patients diagnosed with essential hypertension of the 1st degree, since Sig = 0.056, this is more than 0.05;

d) in patients diagnosed with essential hypertension of the 1st degree, the average value of systolic pressure after treatment is statistically significantly higher than in patients diagnosed with essential hypertension of the 2nd degree, since Sig = 0.198, this is more than 0.05;

e) in patients diagnosed with essential hypertension of the 2nd degree, the average value of systolic pressure after treatment is statistically significantly lower than in patients diagnosed with essential hypertension of the 1st degree, since Sig = 0.198, this is more than 0.05;

Task 13.

Which statement would be correct?

Ranks

	s...	N	Mean Rank	Sum of Ranks
total cholesterol mg / dL before treatment	yes	65	50,35	3272,50
	no	35	50,79	1777,50
	Total	100		

Test Statistics[a]

	total cholesterol mg / dL before treatment
Mann-Whitney U	1127,500
Wilcoxon W	3272,500
Z	-,072
Asymp. Sig. (2-tailed)	,942

a. Grouping Variable: smoking

a) there are no statistically significant differences in total cholesterol before treatment between smokers and non-smokers, since Sig = 0.942, which is more than 0.05;
b) there are no statistically significant differences in total cholesterol before treatment between smokers and non-smokers, since Sig = 0.072, which is more than 0.05;
c) there are statistically significant differences in total cholesterol before treatment between smokers and non-smokers, since Sig = 0.942, this is more than 0.05;
d) there are statistically significant differences in total cholesterol before treatment between smokers and non-smokers, since Sig = 0.072, this is more than 0.05;
e) there are statistically significant differences in total cholesterol before treatment between smokers and non-smokers, since Sig = 0.942 and 0.072, this is more than 0.05;

Task 14.

Specify the correct sequence when solving the problem: are there differences in the average value of body mass index before treatment in people suffering from insulin-dependent and insulin-independent types of diabetes under the age of 50 years.

a) select people with insulin-dependent diabetes under 50 years of age → test pre-treatment body mass index for Gaussian law → select people with insulin-independent diabetes under 50 years of age → test pre-treatment body mass index for Gaussian law → select all people under the age of 50 → if both parameters correspond to Gauss's law, then we will run the "Independent-Samples T Test"; if at least one does not correspond to Gauss's law, then select "2 Independent-Samples";
b) select people with insulin-dependent diabetes under 50 years of age → test for Gaussian body mass index before treatment → select people with insulin-independent diabetes under 50 years of age → test for Gaussian body mass index before treatment → if both parameters correspond to Gauss's law, then let's run the "Independent-Samples T Test"; if at least one does not correspond to Gauss's law, then select "2 Independent-Samples";
c) select people with insulin-dependent diabetes under the age of 50 years → test for Gaussian body mass index before treatment → select people with non-insulin-dependent diabetes under the age of 50 years → test for Gaussian body mass index before treatment → remove filter → if both parameters correspond to Gauss's law, then run the "Independent-Samples T Test"; if at least one does not correspond to Gauss's law, then select "2 Independent Samples";

d) select people with insulin-dependent diabetes at age 50 → test for Gaussian body mass index before treatment → select people with insulin-independent diabetes at age 50 → test for Gaussian body mass index before treatment → remove filter → if both parameters correspond to Gauss's law, then we will run the "Independent-Samples T Test"; if at least one does not correspond to Gauss's law, then select "2 Independent-Samples";
e) select people with insulin-dependent diabetes over the age of 50 years → test for Gaussian body mass index before treatment → select people with insulin-independent diabetes over the age of 50 years → test for Gaussian body mass index before treatment → select all people over the age of 50 → if both parameters correspond to Gauss's law, then we will run the "Independent-Samples T Test"; if at least one does not correspond to Gauss's law, then select "2 Independent-Samples";
Task 15.
Specify the correct sequence when solving the problem: is there a relationship between systolic blood pressure and cholesterol levels?
a) check both indicators for compliance with Gauss's law → if both parameters correspond to Gauss's law, then launch Bivariate and select the "Pearson" test; if at least one does not correspond to Gauss's law, then we will choose "Spearman";
b) check both indicators for compliance with Gauss's law → if both parameters correspond to Gauss's law, then launch Bivariate and select the "Spearman" test; if at least one does not correspond to Gauss's law, then choose "Pearson";
c) check both indicators for compliance with Gauss's law → if both parameters correspond to Gauss's law, then launch Bivariate and select the "Kendall's" test; if at least one does not correspond to Gauss's law, then choose "Pearson";
d) check both indicators for compliance with Gauss's law → if both parameters correspond to Gauss's law, then launch Bivariate and select the "Spearman" test; if at least one does not correspond to Gauss's law, then we will choose "Kendall's";
e) check both indicators for compliance with Gauss's law → if both parameters correspond to Gauss's law, then run Crosstabs and select the "Phi and Cramer's V" test;
Task 16.
Which statement would be correct?

Correlations

		systolic blood pressure before treatment	total cholesterol mg / dL before treatment
systolic blood pressure before treatment	Pearson Correlation	1	,425**
	Sig. (2-tailed)		,000
	N	100	100
total cholesterol mg / dL before treatment	Pearson Correlation	,425**	1
	Sig. (2-tailed)	,000	
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

a) there is a relationship between systolic blood pressure and total cholesterol before treatment, it is moderate, highly significant and direct;
b) there is a relationship between systolic blood pressure and total cholesterol before treatment, it is strong, significant and inverse;
c) there is no connection between systolic blood pressure and total cholesterol before treatment, it is functional and direct;
d) there is a relationship between systolic blood pressure and total cholesterol before treatment, it is significant, highly significant and inverse;
e) there is no relationship between systolic blood pressure and total cholesterol before treatment, it is significant, highly significant and inverse;

Task 17.

Which statement would be correct?

Correlations

			systolic blood pressure before treatment	age
Spearman's rho	systolic blood pressure before treatment	Correlation Coefficient	1,000	,182
		Sig. (2-tailed)	.	,070
		N	100	100
	age	Correlation Coefficient	,182	1,000
		Sig. (2-tailed)	,070	.
		N	100	100

a) there is a relationship between systolic blood pressure and age, it is moderate, significant and direct. Blood pressure depends on age;
b) there is no relationship between systolic blood pressure and age, it is moderate, significant and direct. Blood pressure does not depend on age;
c) there is a relationship between systolic blood pressure and age; it is moderate, highly significant and inverse. Age depends on blood pressure;
d) there is a relationship between systolic blood pressure and age; it is moderate, significant and inverse. Blood pressure depends on age;
e) there is a relationship between systolic blood pressure and age, it is moderate, significant and direct. Blood pressure does not depend on age;

4. METHODOLOGICAL MATERIALS DETERMINING PROCEDURES FOR ASSESSING KNOWLEDGE, ABILITIES, SKILLS AND (OR) ACTIVITY EXPERIENCE CHARACTERIZING THE STAGES OF COMPETENCY FORMATION

DESCRIPTION OF INDICATORS AND CRITERIA FOR ASSESSING COMPETENCIES, DESCRIPTION OF ASSESSMENT SCALES

1. Test (assessment of "know" level of training)

Within the framework of the discipline "Medical Informatics", the assessment of the level of training "to know" (theoretical aspects) is carried out using tests as a means of consolidating knowledge. As a result, all students in the group are involved in active work, and all participants are graded. The survey covers all topics of the discipline using tests.

Grading scale for completed tests

One test task contains 50 closed questions.

1. The tasks are given ready-made answers to choose from, one correct and the rest incorrect.
2. The student must remember: in every task with a choice of one correct answer, there must be a correct answer.
3. For each correct answer, 2 points are given.
4. The overall score is determined as the sum of the points scored.
5. Mark (in %).

1. Thesis

Work on the thesis is carried out by students individually, independently, in order to consolidate and deepen theoretical knowledge on the given nosology. The topic of the thesis is given by the teacher, and the proposed work plan is discussed in class, then the student independently selects, analyzes and structures the material. The volume of the submitted thesis is 2 sheets of printed text. The work must contain a definition of the disease, classification, main symptoms, laboratory diagnostics, principles of treatment and a list of references (up to 5 sources). The structure of the thesis contains a title page, designed in accordance with accepted requirements. The thesis is submitted to the teacher for verification within the specified time frame, after correcting significant comments (if any).

Grading scale for completed tests

The thesis reveals the content of the given nosology, its definition, classification, symptoms, laboratory diagnostics, treatment, list of references - 0-40%.

The thesis is submitted on time, taking into account all requirements for the content and design of the work - 0-30%.

The student can justify his judgments, masters the conceptual apparatus of the topic - 0-30%.

The thesis is scored 0-100%.

2. Situational task

Situational task assessment scale (current control) in %

- Setting a problem on a relevant topic – 0-20%

- Drawing up a filter that includes all the necessary variables with the conditions that define them – 0-20%

- Checking the Gaussian law for the required variable – 0-20%

- A conclusion is drawn regarding the obtained Sig value – 0-20%

- All descriptive statistics found – 0-20%

All problems are graded at 100%; based on the results of solving problems on the topics covered in the section, all % are summed up and the arithmetic mean is found.

3. Control work

Assessment scale for test work (midterm test) in %:

- Drawing up a filter that includes all the necessary variables with the conditions that define them and a clear definition of the sample - 0-25%
- Checking for Gauss's law of necessary variables – 0-25%
- The correct calculation criterion was selected and a conclusion was made regarding the obtained Sig value - 0-25%
- Statistical and clinical differences required for the task were found – 0-25%

Each solved problem is assessed at 100%, based on the results of solving all problems on the test ticket, all % are summed up and the arithmetic mean is found.

4. Intermediate control

VERBAL SURVEY RATING SCALE

When assessing oral answers to test the level of KNOW training, the following criteria are taken into account:

1. Knowledge of the basic processes of the subject area being studied, the depth and completeness of the disclosure of the issue.

2. Mastery of terminology and its use when answering.

3. The ability to explain the essence of phenomena, events, processes, draw conclusions and generalizations, and give reasoned answers.

4. Proficiency in monologue speech, logic and consistency of response, ability to answer questions posed, express your opinion on the issue under discussion.

An excellent mark (85-100 points) is given to an answer that shows a strong knowledge of medical informatics terminology; Excellent knowledge of the design of medical research, deeply distinguishing longitudinal from cross-sectional studies; confidently distinguishes between types of random variables; is fluent in the basic principles and methods of statistical processing of medical data; demonstrates a strong knowledge of interpreting the results obtained.

A good mark (70-84 points) is given to an answer that demonstrates a strong knowledge of medical informatics terminology; insufficiently deep knowledge of the structure of medical research, superficially distinguishing between longitudinal and cross-sectional studies; does not confidently distinguish between types of random variables; has poor command of the basic principles and methods of

statistical processing of medical data; shows lack of confidence in interpreting the results obtained.

The mark “satisfactory” (60-69 points) evaluates an answer that shows average knowledge of medical informatics terminology; not deep knowledge of the structure of medical research, poorly distinguishes between longitudinal and cross-sectional studies; poorly distinguishes between types of random variables; does not know the basic principles and methods of statistical processing of medical data; shows poor knowledge of interpreting the results obtained.

An unsatisfactory mark (0-59 points) is given to a response that shows very poor knowledge of medical informatics terminology; does not know the structure of medical research, does not distinguish between longitudinal and cross-sectional studies; does not distinguish between types of random variables; does not know the basic principles and methods of statistical processing of medical data; does not know the interpretation of the results obtained.

GRADING SCALE FOR ANALYTICAL AND PRACTICAL TASKS

(intermediate control – “BE ABLE AND OWN”)

When assessing answers to testing the level of training to BE ABLE and COMPLIANT, the following criteria are taken into account:

1. methods of creating a scientific base in the SPSS application program;

2. methods of setting the necessary medical tasks, according to the obtained medical data;

3. theoretical and practical methods of analysis and substantiated conclusions based on the obtained medical data;

4. methods of practical use of modern computers for processing medical information;

5. skills in using various methods of analysis when working with scientific medical data;

6. methods of analyzing new scientific and educational literature, experimental results;

An excellent mark (85-100 points) is given to the answer in which the student independently poses a medical problem; evaluates the necessary methods used to solve a given problem; solves the problem, demonstrating deep skills in methods of statistical processing of medical data; professionally expresses and justifies his position on the interpretation of the results obtained, thereby demonstrating the ability to think and analyze. Demonstrates complete understanding. All requirements for the task have been met.

The mark “good” (70-84 points) evaluates the answer in which the student independently poses a medical problem; does not evaluate the necessary methods used to solve a given problem; solves the problem without demonstrating deep skills in methods of statistical processing of medical data; weakly expresses and substantiates his position on the interpretation of the results obtained, thereby demonstrating poor ability to think and analyze. Demonstrates not very complete understanding. Not all requirements for the task have been met.

The mark “satisfactory” (60-69 points) evaluates the answer in which the student cannot independently pose a medical problem; does not evaluate the necessary methods used to solve a given problem; incorrectly solves the problem, showing poor skills in using methods of statistical processing of medical data; weakly expresses, but cannot justify his position on the interpretation of the results obtained, thereby showing poor ability to think and analyze. Demonstrates partial understanding. Many requirements for the task have not been met.

An unsatisfactory mark (0-59 points) is given to an answer in which the student demonstrates a lack of understanding of the problem or there is no answer and there was not even an attempt to solve the problem.

5. METHODOLOGICAL INSTRUCTIONS FOR STUDENTS ON MASTERING DISCIPLINE AND PERFORMING CONTROL TASKS

BASIC REQUIREMENTS FOR INTERMEDIATE CONTROL

The teacher is given the right to give a grade without questioning the ticket to those students who scored more than 60 points for the current and midterm tests.

At the intermediate control, the student must correctly answer the theoretical questions on the ticket and solve a situational task.

Students can use technical means, reference literature, visual aids, and training programs.

Interim control assessment:

- min 10 points - Questions to check the level of knowledge of KNOW (if the student correctly formulates basic concepts when answering the questions asked)
- 10-30 points – Tasks to check the level of learning to BE ABLE and COMPLIANT (if the student correctly formulates the essence of the problem specified in the ticket and gives recommendations for solving it and fully completing the test task).

BASIC REQUIREMENTS FOR CURRENT CONTROL.

To understand the material and assimilate it well, the following sequence of actions is recommended:

1. After listening to the lecture and finishing the classes, in preparation for the next day’s classes, you must first review and think about the text of the lecture listened to today.

2. When preparing for the next lecture, you need to look through the text of the previous material, think about what the topic of the next lecture might be.

3. During the week, choose a time to work with the recommended literature.

4. To prepare for practical classes and independent work, you must first read the basic concepts and approaches to the topic of the assignment. It is recommended to use course guidelines and lecture notes.

5. When completing a task, you must first understand what is required in it, what theoretical material needs to be used, outline a plan for implementation, and then proceed to the task and draw a high-quality conclusion.

6. When preparing for intermediate and midterm tests, you need to study the theory: definitions of all concepts and approaches to assessment to the point of understanding the material and independently complete several standard tasks.

7. Making up missed classes.

Control over the assimilation of the material of the discipline curriculum is carried out systematically by the teacher of the department and is reflected in the teacher's journal and in points.

A student who receives an unsatisfactory grade on the current material is required to prepare this section and respond to the teacher on it during an individual interview.

A lecture missed without good reason must be completed by the lecturer using the method of oral questioning within a month from the date of absence. Other methods of making up for missed lectures are also possible (survey for practical lessons, test control, etc.).

Practicing practical exercises.

- Each lesson missed without a good reason is compulsory. Workouts are carried out according to the department's schedule, agreed with the dean's office.

- Missed classes must be made up within 10 days from the date of absence. Practical classes missed without a valid reason are covered in no more than one lesson per day. Missed classes for a valid reason (illness, absences with the permission of the dean's office) are worked out based on thematic material without counting hours.

- For students who missed seminar classes due to a long-term illness, work must be carried out after permission from the dean's office according to an individual schedule agreed with the department.

- In exceptional cases (participation in interuniversity conferences, competitions, olympiads, duty, etc.), the dean and his deputy, in agreement with the department, may exempt undergraduates from making up some missed classes.

RECOMMENDATIONS FOR PREPARING FOR THE TEST

When preparing for tests, it is necessary to study the lecture material and the corresponding pages of the main textbook (it is also advisable to read additional literature); solve all necessary situational problems; watch video lessons.

GUIDELINES FOR WRITING THE THESIS

When writing a thesis, you need to take the nosology from the teacher, register in the e-library, set search conditions, find sources, analyze the information received and write a thesis. To search for the necessary laboratory tests for the selected nosology, you can use the Google search engine. Prepare the thesis according to the template and plan

RECOMMENDATIONS FOR SOLVING SITUATIONAL PROBLEMS

When solving medical situational problems using a pre-prepared training file, you need to use lecture notes, short notes from practical material, or watch relevant video lessons;

FREQUENCY AND SAMPLING PROBLEM:

- set a situational task on a given topic using commands such as “Select cases” and “Frequencies”;
- solve it on a computer with SPSS 16.0 installed;
- analyze the results obtained and draw appropriate conclusions;
- save the resulting solution for illustration to the teacher;
- voice the problem, tell the solution algorithm and the conclusions obtained to the teacher.

TASKS DESCRIBE