Syllabus

Departments: "Medical Biophysics and Information Technologies",
"Social health insurance and public health"

Work program of the subject "Introduction to scientific research"

Educational program 6B10115 "Medicine"

1.	**General information about the subject**		
1.1	Subject codes: ISR 2212	1.6	Academic year: 2023-2024
1.2	Subject name: Introduction to scientific research	1.7	Year: 2
1.3	Prerequisites: ICT, introduction to specialty	1.8	Semester: 4
1.4	Postrequisites: hygiene and epidemiology, basics of evidence medicine	1.9	Number of credits (ECTS): 6
1.5	Cycle: BD	1.10	Component: HEIC
2.	**Subject description**		
Introduction to biostatistics. Stages of statistical research. Descriptive statistics. Normal distribution. Basics of the theory of statistical hypothesis testing. Non-parametric alternative. Analysis of qualitative variables. Correlation and regression analysis. Stages of scientific research. Public health and healthcare. Demography. Morbidity. Ethics of scientific research. Medical ethics and deontology.			
3.	**Summative assessment form**		
3.1	Testing (MCQs) ✅	3.5	Coursework
3.2	Writing	3.6	Essay
3.3	Oral	3.7	Project
3.4	OSPE (objective structured practical exam) ✅	3.8	Other (specify)
4.	**Subject objectives**		
1) Formation of theoretical knowledge about biostatistics, skills in applying the methods of statistical processing of medical data and working with statistical software, as well as skills in scientific analysis and their practical application. 2) Formation of theoretical knowledge about public health - strategy and policy, medical ethics and research ethics; skills in applying basic ethical principles in professional activities, skills in critical thinking and analysis, application of the basics of medical legislation.			
5.	**Subject learning outcomes**		
LO1.	Demonstrates knowledge of terms and understanding of biostatistical methods		
LO2.	Selects the most appropriate statistical procedures to describe medical research data		
LO3.	Applies statistical methods to describe medical data, including using STATISTICA program		
LO4.	Demonstrates knowledge of organization, planning and management in public health, applying the rules of organization of international cooperation in the field of health.		
LO5.	Analyzes data on morbidity, disability and mortality, calculating demographic and health indicators of the population.		
LO6.	Operates with knowledge of the basics of scientific research to formulate a hypothesis, setting the goal and objectives of the study, choosing methods of scientific research and searching for information for compiling a literature review.		
LO7.	Integrates knowledge of the principles of deontology with medical legislation, effectively applying the principles of ethics in the relationship between the patient and healthcare professionals.		
5.1	Subject LO	The learning outcomes of the educational program, which are related to the learning outcomes of the subject	
	LO1 LO2 LO 3	LO 1. Applies fundamental knowledge of biomedical, clinical, epidemiological and social-behavioural sciences in practice.	
	LO4 LO7	LO 3. Carries out its activities within the framework of the RK legislation in the field of health care to ensure quality health care.	

	LO5	LO 7. Observes public health, sanitary and hygienic regime and occupational safety standards in health care organizations, epidemiological safety of the environment
	LO6	LO 9. Works in the electronic databases of the RK health care system, ensuring documentation of the processes of health care service delivery.
	LO1 LO2 LO 3	LO 10. Performs professional duties efficiently on the basis of self-control and continuous improvement of their activities.

6. Detailed about subjects

6.1 **Biostatistics**
Venue: South Kazakhstan Medical Academy, main building, Department of Medical Biophysics and Information Technologies. Al-Farabi Square - 1, 5th floor, rooms No. 500-511. Phone 39-57-57, add 1063.
Public health
Venue: South Kazakhstan Medical Academy, 4th building, Department of Social Health Insurance and Public Health. Al-Farabi Square - 3b, 2nd floor, rooms No. 1-9. Phone 121, 122.

6.2

Number of hours	Lectures	Practical classes	SIW	SIWT
Biostatistics	6	24	42	18
Public health	6	24	42	18

6.3 Subject study plan

#	Week / day	Classroom lessons				Subject name
		Lectures	Pract. classes	SIWT	SIW	
1	1st day 1st week	1	3	2	5	Biostatistics
2	2nd day 1st week	1	3	2	5	Biostatistics
3	3rd day 1st week	1	3	2	5	Biostatistics
4	4th day 1st week	1	3	2	5	Biostatistics
5	5th day 1st week	1	3	2	5	Biostatistics
6	6th day 2nd week	1	3	2	5	Biostatistics
7	7th day 2nd week	-	3	3	6	Biostatistics
8	8th day 2nd week	-	3	3	6	Biostatistics
9	9th day 2nd week	1	3	2	5	Public health
10	10th day 2nd week	1	3	2	5	Public health
11	11th day 3rd week	1	3	2	5	Public health
12	12th day 3rd week	1	3	2	5	Public health
13	13th day 3rd week	1	3	2	5	Public health
14	14th day 3rd week	1	3	2	5	Public health
15	15th day 3rd week	-	3	3	6	Public health
16	16th day 4th week	-	3	3	6	Public health

7. Information about teachers

№	Full name	Degrees, Position	Email	Scientific interests	Achievements
Department "Medical Biophysics and Information Technologies"					
1.	Ivanova Marina Borisovna	PhD, Professor	marina-iv@mail.ru	Theory of differential equations. Processing of medical data	Author of over 50 scientific articles, monography, 3 teaching aids, 3 study guides, electronic textbook "Biostatistics"
2.	Ormanov Nurlan Kerimbekovich	PhD, Professor	nurlanormanov2@gmail.com	Planning and organization of the educational process in the conditions of credit technologies of education	Author of over 40 scientific articles and 30 methodological articles, teaching aids.
3.	Berdieva Meruert Aimambetovna	PhD	meruert_berdieva@mail.ru	Innovative teaching methods	Author of over 30 scientific and methodical articles, 1 book, 11 methodical instructions.
4.	Maulenova Akmaral Aitbekovna	Master, Senior teacher	maral_tasken@mail.ru	Innovative teaching methods	Author of several scientific articles, co-author of study guides
5.	Imanbaeva Maral Amanbaevna	Master, Senior teacher	maral_81_19@mail.ru	Innovative teaching methods	Author of several scientific articles, co-author of study guides
6.	Baizakova Bakhyt Satanovna	Master, Senior teacher	bakhyt.baizakova@bk.ru	Innovative teaching methods	Author of several scientific articles, co-author of study guides
Department "Social Medical Insurance and Public Health"					
1.	Magay Luybov Nikolaevna	Senior teacher, master degree	magai_luybov@mail.ru	Medical and social problems of the elderly.	Has released 7 articles.
2.	Mizamov Dauren Muhtarovich	teacher, master degree	dauren903@mail.ru	Medical and social aspects of the organization of medical care to the elderly population (for example, South Kazakhstan region).	Has released 6 articles.
3.	Aidar Aliya	teacher, master degree	turaidar_aa@mail.ru	Medical and social characteristics of the impact of burns among young children in Shymkent.	Has released 3 articles.

8. Thematic plan

Day	Topic	Brief content	Subject LO	Number of hours	Forms/ Methods/ Technologies of learning	Forms/ Methods of assessment
1.	**Lecture** Introduction to biostatistics. Stages of statistical research.	Introduction to biostatistics. Definition of biostatistics. The role of biostatistics in medicine. Stages of statistical research. Research program and plan. Data collection. Data processing. Analysis, conclusions, suggestions.	LO 1	1	Lecture-information / Presentation	Feedback (quick survey)
	Practical class	Basic concepts and definitions.	LO 1	3	Practice /	Computer

	Introduction to biostatistics.	Types of statistical data. Basic types of measuring scales. Stages of statistical research.	LO 2		Solving situational problems	testing, MCQs (100-point scale assessment)
	SIWT/SIW Consultation on the implementation of an individual task 1 / History of the development of biostatistics	Stages of the formation of science. Famous scientists in the field of biostatistics.	LO 1	2/5	Individual task 1	Logical flowchart (assessment according to checklist)
2.	**Lecture** Descriptive statistics.	Introduction to descriptive statistics. Frequency distribution. Histograms. **"**Stem and leaf". Measures of central tendency and dispersion. Data visualization. "Box and Whiskers".	LO 1	1	Lecture-information / Presentation	Feedback (quick survey)
	Practical class Frequency distribution.	Frequency distribution and its numerical characteristics. Graphical representation of frequency distribution. Introduction to the STATISTICA program (the "Descriptive statistics" procedure)	LO 1 LO 2	3	Practice / Solving situational problems	Oral survey. Practical work (assessment according to checklist)
	SIWT/SIW Consultation on the implementation of an individual task 2 / Creating an interval frequency distribution	Calculation of the number of intervals, their width and limits. Sorting data. Frequency analysis.	LO 3	2/5	Individual task 2	Solving problems (assessment according to checklist)
3.	**Lecture** Normal distribution. Basics of the theory of statistical hypothesis testing. Goodness-of-fit tests.	The specifics of the occurrence of normal distribution in the context of biology and medicine. Properties of normal distribution. Key concepts and definitions of the theory of statistical hypothesis testing. Procedure for testing statistical hypotheses. Types of errors in hypothesis testing. Pearson's goodness-of-fit test. Kolmogorov-Smirnov's goodness-of-fit test.	LO 1	1	Lecture-information / Presentation	Feedback (quick survey)
	Practical class Basics of the theory of statistical hypothesis testing. Goodness-of-fit tests.	Hypothesis testing of the normal distribution of a sample. Pearson's goodness-of-fit test. Kolmogorov-Smirnov's goodness-of-fit test. Hypothesis testing of the normal distribution of a sample in the STATISTICA program.	LO 1 LO 2 LO 3	3	Practice / Solving situational problems	Oral survey. Practical work (assessment according to checklist)
	SIWT/SIW Consultation on the implementation of an individual task 3 / Calculation of numerical	Calculation of numerical characteristics of an interval frequency distribution (mean, variance, standard deviation, range, coefficient of variation), its graphical representation (polygon,	LO 3	2/5	Individual task 3	Solving problems (assessment according to checklist)

	characteristics of an interval frequency distribution, its graphical representation.	histogram, box plot, stem-and-leaf plot).				
4.	**Lecture** Parametric methods of comparative statistics	Difference between parametric and nonparametric statistical tests. Fisher test. Two-sample t-test. Paired Student's t test. One sample t-test. One-way analysis of variance.	LO 1	1	Lecture-information / Presentation	Feedback (quick survey)
	Practical class Parametric methods of comparative statistics	Fisher's F-test (comparison of two sample variances). Hypothesis testing for the equality of two means using the t-test for independent samples. One-sample t-test. Hypothesis testing for the equality of two means using the t-test for dependent samples. Implementation of the t-test in the STATISTICA program.	LO 1 LO 2 LO 3	3	Practice / Solving situational problems	Oral survey. Practical work (assessment according to checklist)
	SIWT/SIW Acceptance of SIW1. Consultation on the implementation of an individual task 4 / Goodness-of-fit tests.	Hypothesis testing of the normal distribution of a sample. Pearson's goodness-of-fit test. Kolmogorov-Smirnov's goodness-of-fit test.	LO 1 LO 2 LO 3	2/5	Individual task 4	Solving problems (assessment according to checklist)
5	**Lecture** Nonparametric methods of comparative statistics	Advantages and disadvantages of nonparametric tests. Mann-Whitney test. Wilcoxon test. Kruskal-Wallis test.	LO 1	1		
	Practical class Nonparametric methods of comparative statistics	Mann-Whitney test. Wilcoxon test. Implementation of nonparametric tests in the STATISTICA program.	LO 1 LO 2 LO 3	3	Practice / Solving situational problems	Oral survey. Practical work (assessment according to checklist)
	SIWT/SIW Acceptance of SIW2. Consultation on the implementation of an individual task 5 / One-way analysis of variance (ANOVA).	One-way analysis of variance (ANOVA). Conditions for application. Application scheme. Kruskal-Wallis test. Implementation of ANOVA in the STATISTICA program.	LO 1 LO 2 LO 3	2/5	Individual task 5	Solving problems (assessment according to checklist)
6.	**Lecture** Analysis of qualitative variables.	Definition of qualitative variables. Importance of analyzing qualitative variables in medical research. Types of qualitative variables (binary, nominal, ordinal). Construction of contingency tables of size 2x2 and size mxn. Pearson's chi-square test. Fisher's exact test. McNemar's chi-square test.	LO 1	1	Lecture-information / Presentation	Feedback (quick survey)
	Practical class Analysis of qualitative	2x2 contingency tables. Pearson's chi-square test (2x2). Yates'	LO 1 LO 2	3	Practice / Solving	Oral survey. Practical

	variables.	correction. Fisher's exact test. McNemar's chi-square test. Contingency tables of size mxn. Pearson's chi-square test (mxn). Construction of contingency tables and implementation of chi-square tests in the STATISTICA program.	LO 3		situational problems	work (assessment according to checklist)
	SIWT/SIW Consultation on the implementation of an individual task 6/Odds ratio and relative risk.	Calculation and interpretation of odds ratio. Calculation and interpretation of relative risk. Differences between odds ratio and relative risk.	LO 1 LO 2 LO 3	2/5	Individual task 6	Solving problems (assessment according to checklist)
7.	**Practical class** Correlation analysis.	Introduction to correlation analysis. Pearson correlation coefficient. Interpretation of the correlation coefficient. Assessment of the significance of the correlation coefficient. Spearman's rank correlation coefficient. Implementation of correlation analysis in the STATISTICA program.	LO 1 LO 2 LO 3	3	Practice / Solving situational problems	Oral survey. Practical work (assessment according to checklist)
	SIWT/SIW Midterm control 1 / Midterm control 1 preparation	Introduction to biostatistics. Stages of statistical research. Descriptive statistics. Basics of hypothesis testing theory. Nonparametric statistical tests. Analysis of variance. Analysis of qualitative variables. Odds ratio and relative risk. Correlation analysis.	LO 1 LO 2 LO 3	3/6	Computer testing, MCQs	100-point scale assessment
8.	**Practical class** Regression analysis.	Estimation of linear regression parameters using the least squares method. Hypothesis testing for the significance of regression coefficients. Hypothesis testing for the significance of regression equation. Coefficient of determination. Implementation of regression analysis in the STATISTICA program.	LO 1 LO 2 LO 3	3	Practice / Solving situational problems	Oral survey. Practical work (assessment according to checklist)
	SIWT/SIW Consultation on the completion of individual assignment 7 / Summarizing the material using logical flowchart.	Algorithm for comparing two groups using the t-test, algorithm for comparing two samples, algorithm for comparing multiple samples, algorithm for comparing qualitative data.	LO 2	3/6	Individual task 7	Logical flowchart (assessment according to checklist)
9.	**Lecture.** Public health and health care as a science. An introduction to scientific research.	The main task of public health and health care. Modern problems of population health in the countries of the world. Notion of the term "Science" and its classification. Definition of the purpose of science	LO4	1	Introductory	Feedback questions

		in cognition "Public health and health care".				
	Practical class Public health systems in Kazakhstan. International co-operation in health care.	Health care in Kazakhstan. Structure of the health care system. Code of the Republic of Kazakhstan. On the health of the people and the health care system	LO4	3	Training cases, Q&A	Assessment interview using a checklist
	SIWT/SIW Priority areas for the protection of public health	Priorities in health care. Strategies "Kazakhstan-2050".	LO4	2/5	Report, presentation, quizzes and tests	Evaluation Criteria for SIWT/SIWs
10.	**Lecture** Modern problems of demography in the Republic of Kazakhstan.	Demographic situation in Kazakhstan. Factors affecting demographic indicators. Population construction.	LO4 LO5	1	Thematic	Feedback questions
	Practical class Methodology of calculation and analysis of medical and demographic indicators.	Indicators of natural population movement. Special demographic indicators.	LO5	3	Training cases, case-study	Assessment interview using a checklist
	SIWT/SIW Demographic development of Kazakhstan.	Demographic security of Kazakhstan. Socio-demographic problems in Kazakhstan. Statistical processing of data.	LO4 LO5	2/5	Report, presentation, quizzes and tests	Evaluation criteria for SIWT/SIWs
11.	**Lecture** Population health, morbidity and methods of their study.	Indicators of morbidity. Methods of studying morbidity. Health index.	LO5	1	Overview	Feedback questions
	Practical class Modern medical and social problems, health promotion issues.	Disease prevention. Dispenserisation. Screening.	LO5	3	Training cases, Q&A	Assessment interview using a checklist
	SIWT/SIW Current trends in morbidity of the population of Kazakhstan.	Current state of morbidity. The main causes of diseases.	LO5	2/5	Report, presentation, quizzes and tests	Evaluation criteria for SIWT/SIWs
12	**Lecture** Disability and its types.	Types of disability. Features ofdifferent types of disability.	LO5	1	Overview	Feedback questions
	Practical class Organisation and conduct of medical and social expertise (MSE).	Composition of the medical and social commission. Rules for conducting the medical and labour expert commission (VTEK). The rules of organisation of MSE and its stages.	LO4 LO5	3	Training cases, case-study	Assessment interview using a checklist
	SIWT/SIW Socially significant diseases and their control	Classification of *socially* significant diseases. Combating socially significant diseases.	LO4 LO5	2/5	Report, presentation, quizzes and tests	Evaluation criteria for SIWT/SIWs

13.	**Lecture** Organisation of medical assistance to the population.	Types of medical activity. Levels of medical care. Forms of medical care.	LO4	1	Overview	Feedback questions
	Practical class Medical care and its types.	Types of medical care. Forms of medical assistance. Organisation of specialised medical care.	LO4	3	Training cases, TBL	Assessment interview using a checklist
	SIWT/SIW Medico-social aspects of a healthy lifestyle.	Models of healthy lifestyles: medical, educational, radical political models.	LO4	3/5	Report, presentation, quizzes and tests	Evaluation Criteria for SIWT/SIWs
14.	**Lecture** Ethics. Medico-ethical aspects of health and illness.	Ethics - aims, objectives and types. Medico-ethical aspects of health. Medico-ethical aspects of illness.	LO7	1	Thematic	Feedback questions
	Practical class Doctor-patient confidentiality.	Definitions of the concept of medical confidentiality. Objects of medical confidentiality.	LO7	3	Training cases, Q&A	Assessment interview using a checklist
	SIWT/SIW Ethical aspects of disease immunoprophylaxis.	The ethics of planning and conducting vaccine prevention research. The ethics of vaccination.	LO6 LO7	3/5	Report, presentation, quizzes and tests	Evaluation Criteria for SIWT/SIWs
15.	**Practical class** The universality of the ethical norm and the uniqueness of moral choice.	Principle of fairness. The notion of the universality of an ethical norm. Moral choice and morality. The uniqueness of moral choice in medicine.	LO7	3	Training cases, case-study	Assessment interview using a checklist
	SIWT/SIW Confidentiality and communication with the patient's relatives. **Acceptance of the boundary control 1**	Confidentiality Principle. Basic communication skills. The principle of a patient-centred approach. Iatrogenesis and the principle of confidentiality.	LO7	3/6	Report, presentation, quizzes and tests	Evaluation Criteria for SIWT/SIWs *Testing*
16.	**Practical class** Ethical regulations	Rights and responsibilities of health care workers and patients. Declaration of Helsinki, Nuremberg Code, Geneva Convention, etc.	LO7	3	Training cases, Q&A	Assessment interview using a checklist
	SIWT/SIW Moral, legal and organisational aspects of transplantology.	Transplantology: history and modernity. Moral issues in transplantology. Legal models of organ procurement from cadaveric donors. Legal bases of transplantation of human organs and tissues in the Republic of Kazakhstan.	LO4 LO7	3/6	Report, presentation, quizzes and tests	Evaluation Criteria for SIWT/SIWs
Exam preparation and conducting				18		
9.	**Teaching methods and controls forms**					
9.1	Lectures	**Biostatistics** Lecture-information / Presentation / Quick survey **Public health**				

		Introductory. Overview. Thematic.
9.2	Practical classes	**Biostatistics** Practice / Solving situational problems / Computer testing, MCQs (100-point scale assessment) Practice / Solving situational problems / Oral survey. Practical work (assessment according to checklist) **Public health** Training cases, TBL case-study, question-and-answer, Assessment interview using a checklist
9.3	SIWT/SIW	**Biostatistics** Individual task / Logic flowchart. Solving problems (assessment according to checklist) **Public health** Report, presentation, test preparation, Evaluation Criteria for SIWT/SIW
9.4	Midterm control	**Midterm control 1 - Biostatistics** Computer testing, MCQs (100-point scale assessment) **Midterm control 1 - Public health** testing

10. Evaluation Criteria

10.1. Criteria for evaluating module learning outcomes

# LO	Name of learning outcomes	Unsatisfactory	Satisfactory	Good	Excellent
1	Student demonstrates knowledge of terms and understanding of biostatistical methods	1) finds it difficult to define the basic terms; 2) names some stages of statistical research; 3) finds it difficult to classify the types of samples, data and measurement scales; 4) finds it difficult to determine the main statistical indicators and parameters; 5) knows some methods of visual presentation of data; 6) does not know the methods of comparative statistics and evaluation of the connection; 7) does not know the basic principles of working with STATISTICA software	1) knows basic terminology; 2) lists the stages of statistical research; 3) finds it difficult to classify the types of samples, data and measurement scales; 4) finds it difficult to determine the main statistical indicators and parameters; 5) knows some methods of visual presentation of data; 6) knows some methods of comparative statistics and communication evaluations; 7) knows the basic principles of working with STATISTICA software	1) knows basic terminology; 2) lists the stages of statistical research; 3) classifies the types of samples, data and measurement scales; 4) determines the main statistical indicators and parameters; 5) knows the basic methods of visual presentation of data; 6) knows the basic methods of comparative statistics and communication evaluations; 7) knows the basic principles of working with STATISTICA software	1) knows basic and extended terminology; 2) lists the stages of statistical research; 3) classifies the types of samples, data and measurement scales; 4) determines statistical indicators and parameters; 5) knows various methods of visual presentation of data; 6) knows various methods of comparative statistics and communication evaluation; 7) knows the principles of working with STATISTICA software
2	Student selects the most appropriate statistical procedures to	1) makes mistakes when choosing statistical indicators and parameters for	1) selects some statistical indicators and parameters for describing statistical	1) selects the main statistical indicators and parameters for describing statistical	1) selects all the necessary statistical indicators and parameters for

	describe medical research data	describing statistical populations; 2) makes mistakes when choosing methods of visual presentation of data; 3) finds it difficult to choose the necessary method for solving a specific problem; 4) finds it difficult to classify parametric and non-parametric methods of comparative statistics; 5) finds it difficult to classify parametric and non-parametric methods for assessing the relationship between variables	populations; 2) defines some methods of visual presentation of data; 3) sometimes finds it difficult to choose the necessary method for solving a specific problem; 4) classifies parametric and non-parametric methods of comparative statistics; 5) classifies parametric and non-parametric methods for assessing the relationship between	populations; 2) defines the main methods of visual presentation of data; 3) knows the algorithm for choosing the necessary method for solving a specific problem; 4) classifies parametric and non-parametric methods of comparative statistics; 5) classifies parametric and non-parametric methods for assessing the relationship between variables	describing statistical populations; 2) defines various methods of visual presentation of data; 3) knows the algorithm for choosing the necessary method for solving a specific problem; 4) classifies parametric and non-parametric methods of comparative statistics; 5) classifies parametric and non-parametric methods for assessing the relationship between variables
3	Student applies statistical methods to describe medical data, including using STATISTICA program	1) makes gross mistakes in the calculation and evaluation of indicators and parameters of statistical aggregates; 2) finds it difficult to present data in graphical and tabular form; 3) finds it difficult to apply in practice the algorithms of the main statistical methods in solving specific problems; 4) does not have the skills to work with the program STATISTICS 5) does not know how to interpret the results of the decision	1) makes minor mistakes in the calculation and evaluation of indicators and parameters of statistical aggregates; 2) performs graphical and tabular presentation of data; 3) does not always correctly apply in practice the algorithms of the main statistical methods in solving specific problems; 4) performs data entry into the spreadsheet; 5) performs some kind of statistical analysis in STATISTICA 6) makes mistakes when interpreting the results of the decision	1) calculates and evaluates indicators and parameters of statistical aggregates; 2) performs graphical and tabular presentation of data; 3) applies in practice the algorithms of the main statistical methods in solving specific problems; 4) performs data entry into the spreadsheet; 5) performs some kind of statistical analysis in STATISTICA 6) does not fully interpret the results of the decision	1) calculates and evaluates indicators and parameters of statistical aggregates; 2) performs graphical and tabular presentation of data; 3) puts into practice the algorithms of statistical methods in solving specific problems; 4) performs data entry into the spreadsheet; 5) perform various types of statistical analysis in STATISTICA 6) interprets the results

4	Demonstrates knowledge of organization, planning and management in public health, applying the rules of organization of international cooperation in the field of health	1) finds it difficult to answer what relates to the healthcare sector; 2) does not know about the healthcare system; 3) does not know the principles of management; 4) can not tell the types of planning.	1) can tell how planning is carried out; 2) knows some functions of planning execution; 3) knows some types of planning; 4) knows the management functions.	1) knows the planning of the management function; 2) knows what is related to the healthcare sector; 3) can tell the basics of healthcare management; 4) knows the principles of management.	1) knows the rules of the organization in the field of healthcare; 2) can talk about the healthcare system; 3) know what planning is in health care; 4) apply the rules for organizing international cooperation in the field of healthcare.
5	Analyzes data on morbidity, disability and mortality, calculating demographic and health indicators of the population.	1) does not know how to calculate demographic and health indicators of the population; 2) does not know how to analyze data on disability and mortality; 3) does not know the main indicators of the natural movement of the population; 4) does not know the demographic indicators of disability.	1) can analyze data by calculating population health indicators; 2) can analyze morbidity data; 3) finds it difficult to answer about morbidity, disability; 4) finds it difficult to answer about the mortality of the population.	1) can analyze morbidity data; 2) can analyze data on disability and mortality; 3) know what the overall mortality rate is; 4) knows the demographic indicators of disability.	1) able to analyze data by calculating population health indicators; 2) can analyze data by calculating demographic indicators; 3) knows the main indicators of the natural movement of the population; 4) knows the statistical indicators of the public health of the population.
6	Operates with knowledge of the basics of scientific research to formulate a hypothesis, setting the goal and objectives of the study, choosing methods of scientific research and searching for information for compiling a literature review.	1) does not know about the research hypothesis; 2) does not know how to search for information to compile a literature review; 3) does not know the basic requirements for formulating a hypothesis of scientific research; 4) does not know about the types of research.	1) able to search for information to compile a literature review; 2) does not know how to formulate the research hypothesis; 3) knows about the types of research; 4) finds it difficult to answer about the basic requirements for the formulation of a hypothesis of scientific research.	1) knows what methods of scientific research exist; 2) knows the main stages of scientific research; 3) knows about the hypothesis of scientific research; 4) know how to use traditional library catalogs and databases, as well as to conduct online searches.	1) is able to search for information to compile a literature review; 2) formulates hypotheses by choosing methods of scientific research; 3) knows the basic requirements for formulating a hypothesis of scientific research; 4) knows the correct wording without logical conflicts and speech errors.
7	Integrates knowledge of the principles of deontology with	1) finds it difficult to answer about the difference between medical ethics and	1) knows about the difference between medical ethics and deontology.	1) may list the principles of medical ethics; 2) knows about	1) knows what is included in the concept of healthcare ethics;

	medical legislation, effectively applying the principles of ethics in the relationship between the patient and healthcare professionals	deontology; 2) does not know the principles of medical ethics; 3) cannot apply the principles of ethics in the relationship between the patient and employees; 4) does not know what is included in the concept of healthcare ethics;	2) knows the basic principles of medical ethics and deontology; 3) cannot integrate knowledge of the principles of deontology with medical legislation and apply the principles of ethics; 4) knows the principles of medical ethics;	ethical principles; 3) knows the ethical code of healthcare; 4) knows about the difference between medical ethics and deontology.	2) knows the basic principles of medical ethics and deontology; 3) can integrate knowledge of the principles of deontology with medical legislation and apply the principles of ethics; 4) applies the principles of ethics in the relationship between the patient and employees;

10.2. Assessment Criteria of teaching methods and technologies

Biostatistics

Checklist for practical class

№	Assessment Criteria	Points	Mark
	1. Oral survey	**Max 20**	
1	- Knows the basic terms and definitions on the topic under consideration. - Knows the basic formulas or algorithm of a certain statistical procedure. - Able to determine the relationship of the topic under consideration with the future profession, gives specific practical examples. - Refers to additional literary sources when answering, has an additional summary, analyzes medical publications.	18-20	Excellent
2	- Knows the basic terms and definitions on the topic under consideration. - Knows the basic formulas or algorithm of a certain statistical procedure. - Able to determine the relationship of the topic under consideration with the future profession, gives specific practical examples.	15-17	Good
3	- Knows the basic terms and definitions on the topic under consideration. - Knows the basic formulas or algorithm of a certain statistical procedure.	10-14	Satisfactory
4	- Does not know the terms and definitions on the topic under consideration. - Does not know formulas on the topic under consideration	0-9	Unsatisfactory
	2. Solving situational problems	**Max 40**	
1	- Correctly chooses the statistical method for the solution. - Properly groups data. - Correctly chooses formulas for calculations. - Compiles calculation tables correctly. - Makes calculations correctly. - Correctly interprets the result.	35-40	Excellent
2	- Correctly chooses the statistical method for the solution. - Properly groups data. - Correctly chooses formulas for calculations. - Compiles calculation tables correctly. - Makes minor errors in calculations. - Makes minor errors when interpreting results.	30-34	Good
3	- Correctly chooses the statistical method for the solution. - Makes mistakes when grouping data. - Correctly chooses formulas for calculations. - Compiles calculation tables correctly. - Makes mistakes in calculations.	15-29	Satisfactory

	- Makes minor errors when interpreting results.		
4	- Incorrectly chooses the statistical method for the solution. - Makes mistakes when grouping data. - Makes mistakes when compiling calculation tables. - Makes mistakes in calculations. - Doesn't know how to interpret the result.	0-14	Unsatisfactory
	3. Practical work	**Max 40**	
1	- Creates a spreadsheet of the right size. - Correctly enters data into a spreadsheet. - Correctly selects statistical procedures and conducts analysis. - Correctly interprets the result. - Correctly saves the spreadsheet and workbook.	35-40	Excellent
2	- Creates a spreadsheet of the right size. - Correctly enters data into a spreadsheet. - Correctly selects statistical procedures and conducts analysis. - Finds it difficult to interpret the result. - Correctly saves the spreadsheet and workbook.	30-34	Good
3	- Creates a spreadsheet of the right size. - Correctly enters data into a spreadsheet. - Finds it difficult to choose a statistical procedure and conduct an analysis. - Finds it difficult to interpret the result. - Correctly saves the spreadsheet and workbook.	15-29	Satisfactory
4	- Finds it difficult to create a spreadsheet of the right size. - Makes mistakes when entering data into a spreadsheet. - Finds it difficult to choose a statistical procedure and conduct an analysis. - Finds it difficult to interpret the result. - Does not distinguish between saving a workbook and a spreadsheet.	0-14	Unsatisfactory
4. Computer testing, MCQs		**Max 100**	
1	MCQs is carried out in electronic form.	90-100	Excellent
2	The test contains 25 questions.	70-89	Good
3	A 100-point scale is used for evaluation.	50-69	Satisfactory
4	Testing time is determined by the teacher (no more than 50 minutes)	<50	Unsatisfactory
Checklist for SIW			
№	Assessment Criteria	Points	Mark
	SIW 1		
Individual task 1. Logic flowchart[1]		**Max 20**	
1.	- The flowchart is simple and concise, placed on one page; - Basic and sufficient concepts on the topic (section) are selected as elements of the flowchart; - Elements of the flowchart are located so that their hierarchy is clear (for example,	18-20	Excellent

[1] ***Logic flowchart***
The purpose of drawing up a logic flowchart is to form the integrity, consistency and consistency of knowledge.
Algorithm for constructing the logic flowchart:
- reading the topic (section);
- analysis of the text, select the main and secondary thoughts and concepts. Write out the basic concepts and categories;
- repeated revision of the text in order to select the links between concepts and categories;
- selection of the most general concepts and categories;
- construction of a flowchart taking into account the identified relationships;
- final review of the text in order to compare it with the received scheme;
- final clarification of the scheme.

	general and specific - in the center, on the periphery - auxiliary); - Logical connections are established between the elements of the flowchart (inside the flowchart and external, i.e. interconnection with adjacent flowcharts); - The flowchart is visual (easy to read): symbols, graphic material, color shades, tables, illustrated material are used.		
2.	- The flowchart is placed on one page; - Basic and sufficient concepts on the topic are selected as elements of the flowchart; - The hierarchy of the elements of the flowchart is not traced, the material is presented chaotically; - Logical connections are established between the elements of the flowchart (inside the flowchart and external, i.e. interconnection with adjacent flowcharts); - The flowchart is not illustrative.	11-17	Good
3.	- The flowchart is located on more than one page; - Elements of the flowchart are not basic and sufficient concepts on the topic; - The hierarchy of the elements of the flowchart is not traced, the material is presented chaotically; - No logical ones are installed between the elements of the flowchart; - The flowchart is not illustrative.	1-10	Satisfactory
4.	- The flowchart has not been completed.	0	Unsatisfactory
Individual task 2.		**Max 40**	
1.	- The number of intervals is correctly determined; - The width and initial value of the first interval are correctly determined; - The data is grouped correctly by intervals; - The interval frequency distribution is correctly constructed; - Frequency analysis has been carried out.	36-40	Excellent
2.	- The number of intervals is correctly determined; - The width and initial value of the first interval are correctly determined; - Errors were made when grouping data by intervals; - The interval frequency distribution was constructed with minor errors. - Frequency analysis has been carried out.	30-35	Good
3.	- The number of intervals is incorrectly determined; - The width and initial value of the first interval were incorrectly determined; - Errors were made when grouping data by intervals; - An interval frequency distribution has been built; - Frequency analysis was carried out incorrectly.	1-29	Satisfactory
4.	- The task was not completed.	0	Unsatisfactory
Individual task 3.		**Max 40**	
1.	- Numerical characteristics of the frequency distribution (mean, variance, standard deviation, range, coefficient of variation) are calculated correctly; - The interval frequency distribution is correctly presented graphically: a polygon, a histogram, a “box with whiskers”, a “stem with leaves” are constructed; - The solution was checked in the STATISTICA program, a screenshot is attached.	36-40	Excellent
2.	- When calculating the numerical characteristics of the frequency distribution, minor errors were made, which were corrected by the student during testing; - Errors were made when constructing some graphs; - The solution was checked in the STATISTICA program, a screenshot is attached.	30-35	Good
3.	- When calculating the numerical characteristics of the frequency distribution, gross errors were made; - The graphs were built with errors; - There is no screenshot of the solution in the STATISTICA program.	1-29	Satisfactory
4.	- The task was not completed.	0	Unsatisfactory
	SIW 2		

Individual task 4.		**Max 100**	
1.	- The probabilities of hitting a random variable in the intervals are correctly determined; - A calculation table was created to determine the calculated value of Pearson's χ2-goodness-of-fit test; - The hypothesis about the normal distribution of the sample was tested in accordance with the algorithm of Pearson's χ2- goodness-of-fit test; - The result of the decision is interpreted correctly. - The values of the theoretical distribution function of a random variable are correctly determined; - A calculation table was created to determine the calculated value of Kolmogorov-Smirnov's λ- goodness-of-fit test; - The hypothesis about the normal distribution of the sample was tested in accordance with the algorithm of Kolmogorov-Smirnov's λ- goodness-of-fit test; - The result of the decision is interpreted correctly.	90-100	Excellent
2.	- Minor mistakes were made in determining the probabilities of a random variable falling into intervals; - The calculation table for determining the calculated value of Pearson's χ2- goodness-of-fit test contains minor mistakes; - The hypothesis about the normal distribution of the sample was tested in accordance with the algorithm of Pearson's χ2-goodness-of-fit test; - The result of the decision is interpreted correctly. - Minor mistakes were made when calculating the values of the theoretical distribution function of a random variable; - The calculation table for determining the calculated value of the Kolmogorov-Smirnov λ- goodness-of-fit test contains minor mistakes; - The hypothesis about the normal distribution of the sample was tested in accordance with the algorithm of Kolmogorov-Smirnov's λ-goodness-of-fit test; - The result of the decision is interpreted correctly.	70-89	Good
3.	- Mistakes were made in determining the probabilities of a random variable falling into intervals; - The calculation table for determining the calculated value of Pearson's χ2- goodness-of-fit test contains mistakes; - The hypothesis about the normal distribution of the sample according to Pearson's χ2-goodness-of-fit test is tested incorrectly; - The result of the solution is interpreted incorrectly; - Mistakes were made when calculating the values of the theoretical distribution function of a random variable; - The calculation table for determining the calculated value of Kolmogorov-Smirnov's λ-goodness-of-fit test contains mistakes; - The hypothesis about the normal distribution of the sample according to Kolmogorov-Smirnov's χ2-goodness-of-fit test is tested incorrectly; - The result of the solution is interpreted incorrectly;	1-69	Satisfactory
4.	- The hypothesis about the normal distribution of the sample was not tested using the Pearson and Kolmogorov-Smirnov goodness-of-fit tests.	0	Unsatisfactory
SIW 3			
Individual task 5.		**Max 60**	
1	- Correctly formulated null and alternative hypotheses; - Correctly calculated factor and residual variances; - The hypothesis was tested according to the Fisher F-test algorithm; - The result of the decision is interpreted correctly; - The solution was checked in the STATISTICA program, a screenshot was attached; - The hypothesis was tested according to the Kruskal-Wallis algorithm;	50-60	Excellent

	- The result of the decision is interpreted correctly; - The solution was checked in the STATISTICA program, a screenshot is attached.		
2	- Correctly formulated null and alternative hypotheses; - Correctly calculated factor and residual variances; - The hypothesis was tested according to the Fisher F-test algorithm; - The result of the decision is interpreted correctly; - The hypothesis was tested according to the Kruskal-Wallis algorithm; - The result of the decision is interpreted correctly;	30-49	Good
3	- Correctly formulated null and alternative hypotheses; - Errors were made when calculating factor and residual variance; - The hypothesis was tested according to the Fisher F-criterion algorithm; - The result of the decision is interpreted correctly; - The hypothesis was tested according to the Kruskal-Wallis algorithm; - The result of the decision was interpreted correctly.	1-29	Satisfactory
4	- The task was not completed.	0	Unsatisfactory
Individual task 6.		**Max 20**	
1	- The relative risk is calculated correctly; - The result of the decision is interpreted correctly; - The odds ratio is calculated correctly; - The result of the decision was interpreted correctly.	15-20	Excellent
2	- The relative risk is calculated correctly; - Errors were made when interpreting the decision; - The odds ratio is calculated correctly; - Errors were made when interpreting the decision.	10-14	Good
3	- The relative risk is calculated correctly; - The odds ratio is calculated correctly; - Interpretation of the results has not been completed.	1-9	Satisfactory
4	- The tasks were not completed.	0	Unsatisfactory
Individual task 7. Logic flowchart			
1.	- The flowchart is simple and concise, placed on one page; - Basic and sufficient concepts on the topic (section) are selected as elements of the flowchart; - Elements of the flowchart are located so that their hierarchy is clear (for example, general and specific - in the center, on the periphery - auxiliary); - Logical connections are established between the elements of the flowchart (inside the flowchart and external, i.e. interconnection with adjacent flowcharts); - The flowchart is visual (easy to read): symbols, graphic material, color shades, tables, illustrated material are used.	18-20	Excellent
2.	- The flowchart is placed on one page; - Basic and sufficient concepts on the topic are selected as elements of the flowchart; - The hierarchy of the elements of the flowchart is not traced, the material is presented chaotically; - Logical connections are established between the elements of the flowchart (inside the flowchart and external, i.e. interconnection with adjacent flowcharts); - The flowchart is not illustrative.	11-17	Good
3.	- The flowchart is located on more than one page; - Elements of the flowchart are not basic and sufficient concepts on the topic; - The hierarchy of the elements of the flowchart is not traced, the material is presented chaotically; - No logical ones are installed between the elements of the flowchart; - The flowchart is not illustrative.	1-10	Satisfactory
4.	- The flowchart has not been completed.	0	Unsatisfactory

Public health		
Checklist for practical classes		
The form control	**Mark**	**Criteria for evaluation**
Oral answer	Excellent A (95-100%); A- (90-94%)	It is put in the event that the student did not make any mistakes, inaccuracies during the answer. He orients himself in theories, concepts and directions in the discipline under study and gives them a critical assessment, uses the scientific achievements of other disciplines.
	Good B+ (85-89%); B (80-84%); B- (75-79%); C+ (70-74%)	It is put in the event that the student during the answer did not make gross errors in the answer, made unprincipled inaccuracies or fundamental errors corrected by the student himself, managed to systematize the program material with the help of the teacher.
	Satisfactory C (65-69%); C- (60-64%); D+ (50-54%)	It is put in the event that the student made inaccuracies and unprincipled mistakes during the answer, limited himself only to the educational literature indicated by the teacher, experienced great difficulties in systematizing the material.
	Unsatisfactory FX (25-49%); F (0-24%).	It is put in the event that the student made fundamental mistakes during the answer, did not work through the main literature on the topic of the lesson; does not know how to use the scientific terminology of the discipline, answers with gross stylistic and logical errors.
Checklist for SIW		
The form control	**Mark**	**Criteria for evaluation**
Topic presentation	Excellent A (95-100%); A- (90-94%)	The presentation was made independently, on time, with a volume of at least 20 slides. At least 5 literary sources were used. The slides are informative and concise. During the defense, the author demonstrates deep knowledge on the topic. Does not make mistakes when answering questions during the discussion.
	Good B+ (85-89%); B (80-84%); B- (75-79%); C+ (70-74%)	The presentation was made independently, on time, with a volume of at least 15 slides. At least 4 literary sources were used. The slides are informative and concise. During the defense, the author demonstrates good knowledge on the topic. Makes minor mistakes when answering questions that he corrects.
	Satisfactory C (65-69%); C- (60-64%); D+ (50-54%)	The presentation was made independently, on time, with a volume of at least 10 slides. At least 3 literary sources were used. The slides are not meaningful. When defending, the author makes fundamental mistakes when answering questions.
	Unsatisfactory FX (25-49%); F (0-24%).	The presentation was not delivered on time, the volume is less than 8 slides. Less than 3 literary sources were used. The slides are not meaningful. When defending, the author makes gross mistakes when answering questions. Does not focus on own material.
Preparation and defense of the report	Excellent A (95-100%); A- (90-94%)	The report was made accurately and delivered on time, written independently on at least 15 typewritten pages, using at least 5 literary sources. Schemes, tables and figures corresponding to the topic of the abstract are given. When defending a report, the text does not read, but tells. Confidently and accurately answers all questions asked.
	Good B+ (85-89%); B (80-84%); B- (75-79%); C+ (70-74%)	The report was made accurately and delivered on time, written independently on at least 10 typewritten pages, using at least 4 literary sources. Schemes, tables and figures corresponding to the topic of the abstract are given. When defending a report, the text does not read, but tells. When answering questions, he makes minor mistakes.
	Satisfactory C (65-69%); C- (60-64%);	The report was made accurately and delivered on time, written independently on at least 8 typewritten pages, using at least 3 literary sources. When protecting the report, the text is read. Uncertainty answers questions, makes fundamental mistakes.

	D+ (50-54%)	
	Unsatisfactory FX (25-49%); F (0-24%).	The abstract was not drawn up in detail, it was not submitted before the deadline. The topic does not show figures, tables. Read during the defense of the report. Made serious mistakes in answering the questions asked.
Line control / Testing	Excellent A (95-100%); A- (90-94%)	90-100% correct answers on tests
	Good B+ (85-89%); B (80-84%); B- (75-79%); C+ (70-74%)	70-89% correct answers on tests
	Satisfactory C (65-69%); C- (60-64%); D+ (50-54%)	50-69% correct answers on tests
	Unsatisfactory FX (25-49%); F (0-24%).	Less than 50% correct answers on tests.

Final examination

Mark by letter system	Numeric equivalent of points	Percentage	Mark by traditional system
A	4,0	95-100	Excellent
A -	3,67	90-94	
B +	3,33	85-89	Good
B	3,0	80-84	
B -	2,67	75-79	
C +	2,33	70-74	
C	2,0	65-69	Satisfactorily
C -	1,67	60-64	
D+	1,33	55-59	
D-	1,0	50-54	
FX	0,5	25-49	Unsatisfactory
F	0	0-24	

11. Learning resources

Biostatistics;

Electronic resources

Student advisor	http://www.studmedlib.ru/
Statistical online calculators	Statistics online - checks assumptions, interprets results (statskingdom.com)
Video-lectures	Т-критерий Стьюдента https://media.skma.edu.kz/video/pppppppppppp
	Корреляционный анализ https://media.skma.edu.kz/video/pppppppppppp

Electronic textbooks

1. Биостатистика [Электронный ресурс]: оқулық /Қ.Ж. Құдабаев [ж/б.].- Электрон. текстовые дан. (85,7Мб). - Шымкент: ОҚМФА, 2015. - 185 бет. эл. опт. диск (CD-ROM)
2. Биостатистика [Электронный ресурс]: учебник /К.Ж. Кудабаев [и др.].- Электрон. текстовые дан. (85,7Мб).- Шымкент: ЮКГФА, 2015. – 187с. эл. опт. диск (CD-ROM)

Public health

1. Лисицын, Ю. П. Общественное здоровье и здравоохранение [Электронный ресурс]: учебник / Ю. П. Лисицын, Г. Э. Улумбекова. - 3-е изд., перераб. и доп. - Электрон.текстовые дан. (43,1Мб). - М: ГЭОТАР - Медиа, 2019. - эл. опт.
2. Медик, В. А. Общественное здоровье и здравоохранение [Электронный ресурс]: учебник / В. А. Медик, В. К. Юрьев. - Электрон.текстовые дан. (47,6 Мб). - М: ГЭОТАР - Медиа, 2013. - 608 с. эл.

3. Лисицын, Ю. П. Общественное здоровье и здравоохранение [Электронный ресурс]: учебник / Ю. П. Лисицын, Г. Э. Улумбекова. - 3-е изд., перераб. и доп. - Электрон.текстовые дан. (40,9 Мб). - М.: Изд. группа "ГЭОТАР-Медиа", 2020. - 544 эл.
4. Щепин, О. П. Общественное здоровье и здравоохранение [Электронный ресурс: учебник / О. П. Щепин, В. А. Медик. - Электрон.текстовые дан. (43,6 Мб). - М.: Изд. группа "ГЭОТАР-Медиа", 2019. - 592 с. эл. опт.диск (CD-ROM).
5. Медик, В. А. Общественное здоровье и здравоохранение [Электронный ресурс]: учебник для мед. училищ и колледжей / В. А. Медик, В. К. Юрьев. - 3-е изд., перераб. и доп. - Электрон.текстовые дан. (37,2 МБ). - М.: Издательская группа "ГЭОТАР- Медиа", 2019. - 288 с. эл. опт. диск.

Software

Biostatistics

1.MS Excel
2.STATISTICA

Literature

Biostatistics

Main

1. Койчубеков Б. К. Биостатистика. уч. пособие / Б.К. Койчубеков. - Алматы: Эверо, 2016. - 152 с.
2. Бөлешов М.Ә. Медициналық статистика: оқулық.-Эверо, 2015
3. Койчубеков Б.К. Биостатистика: учебное пособие. - Эверо, 2014
4. Койчубеков Б.К. Биостатистикаға кіріспе курсы: оқу құралы.-Эверо, 2014
5. Раманқұлова А.А. Биостатистика.-Ақ-Нұр, 2013

Supplementary

1. Мысалдар мен тапсырмалардағы биостатистика: оқу-әдістемелік құрал.- Алматы: Эверо, 2013.- 108с
2. Бухарбаев М. А. Медицинская статистика: учебное пособие / М. А. Бухарбаев, В. Н. Казагачев. - 2-е изд. - Алматы: Эпиграф, 2022. - 268 с
3. Rosner Bernard Fundamentals of Biostatistics: Texbook/ B.Rosner. - 8 nd ed. - [s.l.]:GENGAGE learning, 2016

Electronic publications

1. Биологиялық статистика. Раманқұлова А.А. 2019 https://aknurpress.kz/reader/web/1068
2. Медициналық-биологиялық деректерді статистикалық талдауда excel және spss statistics бағдарламаларын қолдану. Чудиновских В.Р., Каипова А.Ш., Алтаева А.У., Абдикадыр Ж.Н. https://aknurpress.kz/reader/web/1341
3. Медициналық-биологиялық зерттеулердегі статистикалық жорамалдарды тексеруге арналған компьютерлік бағдарламаларды қолдану. Чудиновских В.Р., Абдикадыр Ж.Н., Каипова А.Ш. https://aknurpress.kz/reader/web/1343
4. Койчубеков Б.К., Сорокина М.А., Букеева А.С., Такуадина А.И. Биостатистика в примерах и задачах: Учебно-метод. пособие/– Алматы ТОО «Эверо», 2020. https://elib.kz/ru/search/read_book/870/
5. Раманқұлова А.А. Биологиялық статистика. [Мәтін]: оқу құралы/ А.А. Раманқұлова. - 2-бас.- Алматы: Ақнұр баспасы, 2019.- 210 б.http://elib.kaznu.kz
6. Биостатистикаға кіріспе курсы: оқу құралы/ Б.К.Койчубеков, Абдыкешова Д.Т., Алибиева Д.Т.– Алматы: «Эверо» баспасы, 2020. – 102 б. https://elib.kz/ru/search/read_book/868/
7. Койчубеков Б.К., Букеева А.С., Такуадина, А.И.,Жунусова Г.Т., Абдыкешова Д.Т. Мысалдар мен тапсырмалардағы биостатистика. Оқу-әдістемелік құрал – Алматы, Эверо, 2020.- 108 б. https://elib.kz/ru/search/read_book/869/

Койчубеков Б.К. Биостатистика: Учебное пособие – Издательство «Эверо», Алматы, 2020, 154 с. https://elib.kz/ru/search/read_book/867/

Public health

Main

1. Общественное здравоохранение: учебник / А. А. Аканов [и др.]. - Одобрено и рек. комитетом по контролю в сфере образования и науки. Мин-ва образования и науки РК. - М.: "Литтерра", 2020. - 496 с
2. Бөлешов, М. Ә. Қоғамдық денсаулық және денсаулықты сақтау: оқулық / М. Ә. Бөлешов. - Алматы: Эверо, 2015. - 244 бет
3. Кэмпбелл, А. Медициналық этика: оқу құралы: ағылшын тілінен ауд./ А. Кэмпбелл, Г. Джиллет, Г. Джонс;

ред. Ю. М. Лопухин. - М.: ГЭОТАР - Медиа, 2019. - 368 бет.

Additional

1. Рыманов, Д. М. Денсаулық сақтауды басқару этикасы: оқу-әдістемелік кешен = Этика управления в здравоохранении: учебно-методический комплекс / - Алматы: Эверо, 2018. - 164 бет.
2. Медик В. А. Общественное здоровье и здравоохранение: рук. к практ.зан.-М.: ГЭОТАР - Медиа, 2020. - 400 с.

Electronic database

№	Name	Link
1	SKMA repository	http://lib.ukma.kz/repository/
2	Republican Interuniversity Electronic Library	http://rmebrk.kz/
3	Student Advisor	http://www.studmedlib.ru/
4	Open University of Kazakhstan	https://openu.kz/kz
5	Law (access in the reference and information sector)	https://zan.kz/ru
6	Information system «Paragraph Medicine»	https://online.zakon.kz/Medicine/
7	Scientific Electronic Library	https://elibrary.ru/
8	Open Library	https:// kitap.kz/
9	Thomson Reuters	www.webofknowledge.com
10	ScienceDirect	http://www.sciencedirect.com/
11	Scopus	https://www.scopus.com/
12	Digital library «Aknurpress»	https://aknurpress.kz/login

12. Subject policy

Requirements for studying this course:
1. Do not miss classes without reason;
2. Do not be late for classes;
3. Come to classes in uniform;
4. To be active during the practical classes;
5. To prepare for lessons;
6. Take the students independent work and prepare it timely;
7. Not to do other things during lessons;
8. To be tolerant, polite and friendly to students and teachers;
9. Be careful to the department equipment and furniture.
10. Midterm control of students' knowledge in the "Biostatistics" section is carried out on the 7th day of theoretical training. The results of the midterm control being displayed in an electronic journal (Platonus), taking into account penalty points for skipping lectures (missing lectures in the form of penalty points are subtracted from the midterm control assessment). The penalty point for missing 1 lecture is 1.0 point. A student who does not appear for a midterm control without a serious reason is not allowed to take the exam in the subject. The results of the midterm control are provided to the dean's office in the form of a report.
Routine control of knowledge of students in the section "Public Health" is held on the 15th day of theoretical training with putting the results of the boundary control in the electronic journal, taking into account penalty points for missed lectures (missed lectures in the form of penalty points are deducted from the evaluation of the boundary control). The penalty point for missing 1 lecture is 2.0 points. The student who did not appear at the end-of-term control without a valid reason is not allowed to take the examination in the discipline. The results of the end-of-term control are submitted to the dean's office in the form of a report.
11. SIW marks are given at the SIWT lessons, according to the timetable, in the electronic journal (Platonus), taking into account the penalty points for missing SIWT lessons. The penalty point for missing 1 SIWT lesson is 2.0 points.

13. Academic policy based on the moral and ethical values of the academy

1. **Mission**
To be a recognized leader in the field of training competitive personnel!

Vision
Effective system of medical and pharmaceutical education, based on the competence approach and the needs of practical public health and pharmaceutical industries, focused on the training of specialists that meet international quality and safety standards.

Basic ethical principles, on which SKMA relies for the realization of its mission:

	The principle of high professionalism the teaching staff of SKMA – this is permanent improvement of their knowledge and skills, ensuring the provision of quality educational services for students at all levels of training. **The principle of quality in SKMA** – this is the realization of conception of modernization of Kazakhstan education, the main direction of which is to ensure the modern quality of education based on the preservation of its fundamental and compliance with the actual and prospective needs of the individual, society and state, which is ensured by the use in the educational process, scientific-research activities and consultative and diagnostic work of innovative technologies and new achievements of science and practice. **The principle of orientation training** – this is the implementation of a student-centered learning process on flexible path of educational programs, taking into account the rapidly changing economic conditions and current trends in the labor market, the creation of maximum effective conditions for their professional growth, development of motivation and monitoring of training outcomes, continuous renovation of educational programs, expanding the volume of knowledge and competence, necessary for effective professional activity.
2.	Academic policy http://surl.li/eroik
3.	Grading Policy *Student's final mark* (FM) is given at the end of the course, and calculate as a sum of the *admission rating mark* (ARM) and the *final control mark* (FCM) and is given according to the point-rating letter system. FM=ARM+FCM *Admission rating mark* (ARM) is equal to 60 points or 60% and includes: the *current control mark* (CCM) and *midterm control mark* (MCM). The *current control mark* (CCM) is the average score for practical lessons and SIW. The *midterm control mark* (MCM) is the average score of the two midterm controls. The *admission rating mark* (60 points) is calculated via the formula: $MCM_{average} \times 0.2 + CCM_{average} \times 0.4$ *Final control* (FC) is carried out in the form of testing and the student can get 40 points or 40% of the total mark. When testing, the student is asked 50 questions. Calculation of final control is carried out as follows: If the student correctly answered 45 questions out of 50, it will be 90%. $90 \times 0.4 = 36$ points. The final mark is calculated if the student has positive marks both in the admission rating (AR) = 30 points or 30% or more, and in the final control (FC) = 20 points or 20% or more. The final grade (100 points) = $MCM_{average} \times 0.2 + CCM_{average} \times 0.4 + FC \times 0.4$ A student who has received an unsatisfactory mark for one of the types of controls (MK1, MK2, $CC_{average}$) is not allowed to the exam. Penalty points are subtracted from the average score of the current control.

14. Approval and revision

Approval date	**Protocol No.**	**Head of the Department** Medical Biophysics and IT	**Signature**
«26» 05 2023 y.	№ 12	Ivanova M.B.	
Approval date	**Protocol No.**	**Head of the Department** Social health insurance and PH	**Signature**
«09» 06 2023 y.	№ 10	Sarsenbayeva G.Zh.	
Approval date	**Protocol No.**	**Chairman of the EPC**	**Signature**
«05» 06 2023 y.	№ 11	Sadykova A.Sh.	
Revision date	**Protocol No.**	**Head of the Department**	**Signature**
«____» ____202__ y.	№ ___		
Revision date	**Protocol No.**	**Head of the Department**	**Signature**
«____» ____202__ y.	№ ___		
Revision date	**Protocol No.**	**Chairman of the EPC**	**Signature**
«____» ____202__ y.	№ ___		