

INTERNATIONAL HIGHER SCHOOL OF MEDICINE

Department of Public Health

**SYLLABUS
SCIENTIFIC RESEARCH METHODS**

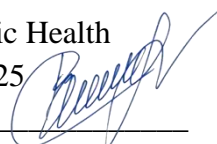
2025-2026 academic year
for students of medical faculty
2 course 4 semester, groups 10,5,6,8
2 credits (60 h, including auditorial 36 h, independent work – 24 h)

Lecturer: **Iliazova Nurgul Bolotbekovna**
0 550 51 09 09 (Whatsapp)
Email: nurgul-umay@mail.ru
Venue: Zoom

Practical classes: **Iliazova Nurgul Bolotbekovna**
0 550 51 09 09 (Whatsapp)
Email: nurgul-umay@mail.ru

Venue: Administration corpus, room # 502

The Syllabus is considered
at the meeting of the department of Public Health
Protocol № 1 dated 28 August 2025
Head of the department K.O. Dzhusupov _____



Course Objective: The purpose of mastering the academic discipline "Scientific research methods" is to introduce students to the definition of modern scientific and theoretical thinking, which seeks to penetrate into the essence of the phenomena and processes being studied. This is possible under the condition of a holistic approach to the object of study, consideration of this object in its origin and development. Also, to teach students who are beginning researchers to be scientifically objective in conducting scientific research in the field of public health. Students will gain practical skills in the use of research projects, data collection and analysis. The development of an idea to the stage of solving a problem is usually performed as a planned process of scientific research. The organization of the planned research process allows you to uncover and deeply understand the objective patterns in nature.

After study of the discipline the student must:

Knowledge: Students acquire the skills to find commonalities in many individual phenomena.

Skill: Familiarizing students with the basic laws and principles of scientific research, demonstrating their application in medical research to understand cause-and-effect relationships.

Attitude: The use of specific methods in substantiating phenomena in scientific research, teaching specific techniques in generalization and summing up results and conclusions.

Pre-requisites: to understand the content of the course, the student must have knowledge gained in previous courses:

- Medical Physics and Higher Mathematics

Post-requisites:

- Evidence-based medicine
- Qualitative research methods
- Fundamentals of biostatistics

THEMATIC PLAN OF LECTURES

№	Theme of lecture	Hours	Date
	Unit 1. The essence of scientific research. The main data sources		
1	Introduction. The nature and types of research?	2	01.09.25
2	Literature review. Search for data on a scientific topic	2	02.09.25
3	The characteristics of the scientific approach. Regular review and Meta-analysis of research	2	03.09.25
4	Identify the major research methodologies. Calculations in the process of research. The difference in measurement indicators: objectivity and validity	2	04.09.25
5	Sampling Methods. Data Collection for Quantitative Designs	2	05.09.25
	Unit № 2. Database for scientific research	2	
6	Entering, Organizing and Analysing Quantitative Data	2	08.09.25
7	Qualitative Designs. Data Collection, Entering and Analysing Qualitative Data	2	09.09.25
8	Quantitative and Qualitative Study Results. Discussion	2	10.09.25
9	Presentation of the research results. Publication of research achievements and results	2	11.09.25
	Total:	18	

THEMATIC PLAN OF PRACTICAL CLASSES

№	Theme of practical class	Hours	Date
	Unit 1. The essence of scientific research. The main data sources		
1	1. Goals and objectives of the literary review 2. Understanding and systematization of literature	2	15-22.09.25
2	1. Defining a literature review according research topics 2. Study and analysis of the work of other researchers on this topic. 3. Understanding and organizing the study results.	2	13.10.25
3	1. Correlation and consideration of the dynamics of the results of the work of other researchers on this topic. 2. Summarizing and analyzing articles by using Meta-analyses approach: a) R.Sataloff, M.Bush, R.Chandra. Systematic and other reviews: Criteria and complexities.	2	20.10.25

	b) G. Tawfik, K. Dila, M. Mohamed. A step by step guide for conducting a systematic review and meta- analysis with simulation data. 3. Understanding and organizing the study results.		
4	1. Cross-sectional and longitudinal studies 2. Causality in research 3. Experimental designs	2	27.10.25
5	Unit control №1	2	27.10.25
	Unit № 2. Database for scientific research		
6	1. The purpose of entering and organizing quantitative data 2. Preparing for data entry 3. Organizing and inputting variables	2	03.11.25
7	1. Qualitative research 2. Research design 3. Data collection	2	10.11.25
8	1. Reporting results 2. Results in quantitative studies 3. Results in qualitative studies	2	17.11.25
9	Unit control №2	2	24.11.25
	Total:	18	

THEMATIC PLAN OF INDEPENDENT WORK OF STUDENTS

U nit №	Theme of independent work	Hour s	Date
1	1. The role of social media in public health communication and behavior change in adolescents	2	15-22.09.25
	2. The effects of cultural immersion experiences on intercultural competence development	2	13.10.25
	3. Advanced logistical tools for data analysis	2	20.10.25
	4. The qualitative research to understand in-depth the motivations and feelings of consumers	2	27.10.25
	5.The benefits and drawbacks of electronic health records in a developing country	2	27.10.25
	6.The use of personalized medicine in treating genetic disorders	2	
	7.The use of artificial intelligence in healthcare	2	03.11.25
	8.The effects of cultural diversity in the workplace on job satisfaction and productivity	2	10.11.25
	9. The impact of remote work on employee productivity and work-life balance	2	17.11.25
	10. The pros and cons of inclusive classes	2	24.11.25
2	11.The impact of telerehabilitation on patient outcomes in Kyrgyzstan	2	15-22.09.25
	12.The effects of floods on public health and healthcare systems	2	13.10.25
	13. The impact of the built environment and urbanisation on physical activity and obesity	2	20.10.25
	14.The role of community health workers in addressing healthcare access and equity in low-income countries	2	27.10.25
	15.The role of public health interventions in reducing health disparities in the USA	2	27.10.25
	16.Cybersecurity and data privacy	2	
	17. Distinguish between the characteristics of basic and applied research		03.11.25
	18. Identify the research methodology used in given examples of both quantitative and qualitative research		10.11.25
	19.The impact of social media on mental health	2	17.11.25
	20. The best way to avoid academic integrity issues	2	24.11.25
	21. The role of collaboration in research methods	2	15-22.09.25
	22. Eight “big tent” criteria for high quality qualitative research	2	13.10.25

Recommended reading for the discipline:

1. Basic:

1. John Creswell. Research Design: qualitative, quantitative & mixed methods approaches. 2009. SAGE Publications Ltd.
2. Donald Ary, Lucy Cheser Jacobs, Chris Sorensen. Introduction to Research in Education. 2010. Wadsworth CENGAGE Learning.
3. Ranjit Kumar. Research Methodology: a step-by-step guide for beginners. 2011. SAGE Publications Ltd.
4. Sarah Tracy. Qualitative Research Methods. 2020. Wiley.
5. Uwe Flick. Designing Qualitative Research. 2007. SAGE Publications Ltd.
6. N.Bruce, D.Pope, D.Stanistreet. Quantitative Methods for Health Research. 2018. Qualitative Research in Health Care.

2. Additional:

1. Amy E. Carusa Broam, T.R.Hobart, C.B.Morrow. Bioethics, Public Health, and Social Sciences for the Medical Professions. 2019. Oxford University Press.
2. R.Riegelman, B.Kirkwood. Public Health 101. 2019. Sage Publications Ltd.
3. Muddasir M.G. Aidaraliev A.A. Political Economy of Health and Development. 2013. Sage Publications Ltd.

Internet resources:

1. <https://methods.cochrane.org/qi/>
2. <https://researchmethodsresources.nih.gov/>
3. <https://learningresources.sagepub.com/research-methods/medicine-health>
4. <http://www.qualitative-research.net/index.php/fqs/article/view/461/984>
5. <https://www.springer.com/gp/authors-editors/journal-author/journal-author-helpdesk>
6. <https://authorservices.taylorandfrancis.com/>
7. <https://www.eliteediting.com.au/how-to-publish-journal-article/>
8. <https://www.scribbr.com/methodology/sampling-methods/>

Grading policy and procedures for all types of work

For the period of studying the discipline, the student gains points for the relevant parameters (per unit):

current score - 40 points

independent work - 20 points

control score (final assessment of knowledge per unit) - 40 points

Maximum score - 100 (40+20+40)

Grading system for student's achievements

Grading criteria per discipline				
Maximum score	Intervals			
	«unsatisfactory»	«satisfactory»	«good»	«excellent»
Current control - 40	0-23	24-30	31-35	36-40
Interval description	The student does not know a significant part of the program material, makes significant blunders; the main content of the material is not disclosed; poor knowledge of terminology; there is no necessary theoretical knowledge and the ability to apply them to solve practical problems. It is also marked "unsatisfactory" if the student refuses to answer.	The student has mastered only the basic program material, but does not know individual features and details; admits inaccuracies; violates the sequence in the presentation of the program material; is systematized, incorrectly formulated; speech is mostly literate, but poor; possesses minimum sufficient level of competence; solves professional practical problems with errors, mainly justifies the decisions made.	The student demonstrates the formation of competencies, has a sufficient level of professional terminology; correctly and logically sets out the answer, does not make significant mistakes and inaccuracies when answering questions; the presentation is sufficiently systematic and consistent; when solving a practical problem, he justifies the decisions made correctly.	The student demonstrates the formation of competencies and can apply them in professional activities; exhaustively, consistently, competently and logically harmoniously presents the answer, without errors; the answer does not require additional questions; good speech, fluency in professional terminology; does not have difficulty answering when changing assignments; knows how to solve professional practical tasks; correctly justifies the accepted solutions, is able to summarize and present the material independently.

Independent work 20	0-11	12-15	16-17	18-20
Interval description	The student has not considered any question of the IWS (main and/or additional) to the end. The student refused to prepare the IWS.	The student has the necessary educational material within the framework of the program, but the answers to the questions are not complete and accurate enough; only data from the main literature on the discipline is used in the answer. He revealed the topic in an incomplete volume in the abstract. He knows the basics of the chosen topic, but there are significant gaps in the presentation of the material, difficulties in its presentation and systematization, conclusions are poorly reasoned, theoretical errors are made in the content of the abstract.	The student has studied the basic and is familiar with the additional literature on the program and uses this knowledge when answering; in the process of answering additional questions, the material is presented correctly, but without sufficient logical sequence; When answering, he uses the necessary graphic material (diagrams, drawings, etc.); sometimes leading questions from the teacher are required to clarify the answers. The student firmly knows the main categories, skillfully applies them to present the material in the abstract.	The student has studied the basic and additional literature on the discipline and competently uses the knowledge gained in the answer; in the answers he uses the materials of the course of related disciplines, provides various examples as justification; in the process of preparation, performs the necessary diagrams at a high level and uses them when responding; does not need any help from a teacher; strives to independently replenish and update the knowledge necessary in professional activities. The content of the abstract is based on a deep and comprehensive knowledge of the topic by the student, the studied literature, the topic is presented logically, reasoned and in full. The basic concepts, conclusions and generalizations are formulated by the student in the abstract convincingly and evidently.
Control work (module) - 40	0-23	24-30	31-35	36-40
Interval description	The student has identified gaps in knowledge of the educational material provided by the program, cannot give clear answers to basic, additional and leading questions. The test is evaluated by points, for each correct answer the student receives 1 point. Out of 40 test questions, up to 24 correct answers, the student receives a grade of "unsatisfactory".	The student has the necessary educational material within the framework of the program, but the answers to the questions are not complete and accurate enough; only data from the main literature on the discipline is used in the answer. Out of 40 test questions, up to 31 correct answers, the student receives a grade of "satisfactory".	The student fully discloses the educational material provided by the program; minor errors (inaccuracies) have been made that do not distort the content of the answers to the questions. Out of 40 test questions, up to 36 correct answers, the student receives a grade of "good".	The student presents the program material in depth, meaningfully, in full at a high scientific level; answers all questions and additional questions with full completeness and without errors. Out of 40 test questions, from 36 to 40 correct answers, the student receives an excellent grade.

Conduct Policy: (lateness, absence, behavior in the auditorium, late submission of work).

- Punctuality and completion of tasks.
- Mandatory attendance of classes.
- Attending class in a clean medical uniform.
- Eliminating conversations on a cell phone in the classroom.
- Active participation in the learning process.
- Doing homework on time.
- Academic detention at the time specified by the teacher.

For violations of the Conduct Policy, the total points for discipline might be reduced to 1-10 points.

Academic Ethics Policy.

- Be tolerant, respect the opinions of others.
- Formulate objections in the correct form.
- Constructively support feedback in all classes.
- Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the following: the absence of references when using printed and electronic materials, quotes, thoughts and works of other authors or students.
- Prompting and cheating during tests, exams, classes is unacceptable as well as passing an exam for another student, unauthorized copying of materials.

For violations of the Academic Ethics Policy, the total points for the discipline may be reduced to 1-10 points.

Guidelines for the lessons of the discipline

Unit 1 The essence of scientific research. The main data sources

Lecture #1: Introduction. The nature and types of research?

Learning outcomes: After the class, students should know the goal and the scope of the discipline and should be able:

- to explain the main reasons for doing research;
- to know characteristics and requirements of the research process.

Key questions covered Class #1:

1. Introduction. Conducting Health Research.
2. Competing Paradigms and Health Research.
3. Types of research from the perspective of applications, objectives and enquiry modes.
4. Quantitative and qualitative research. What type of theory?
5. Influences on the conduct of social research: Values, Practical considerations.

Required readings:

1. John Creswell. Research Design: qualitative, quantitative & mixed methods approaches. 2009. SAGE Publications Ltd.
2. Donald Ary, Lucy Cheser Jacobs, Chris Sorensen. Introduction to Research in Education. 2010. Wadsworth CENGAGE Learning.
3. Ranjit Kumar. Research Methodology: a step-by-step guide for beginners. 2011. SAGE Publications Ltd.
4. Sarah Tracy. Qualitative Research Methods. 2020. Wiley.

Recommended readings:

1. Amy E. Carusa Broam, T.R.Hobart, C.B.Morrow. Bioethics, Public Health, and Social Sciences for the Medical Professions. 2019. Oxford University Press.
2. R.Riegelman, B.Kirkwood. Public Health 101. 2019. Sage Publications Ltd.

Lecture #2: Literature review. Search for data on a scientific topic.

Learning outcomes: After the class, students should know the basics researching and writing the literature review.

Key questions covered Class #2:

1. The functions of the literature review in research.
2. How to carry out a literature search.
3. How to review the selected literature?

Required readings:

1. Ranjit Kumar. Research Methodology: a step-by-step guide for beginners. 2011. SAGE Publications Ltd.
2. Sarah Tracy. Qualitative Research Methods. 2020. Wiley.

Recommended readings:

1. R.Riegelman, B.Kirkwood. Public Health 101. 2019. Sage Publications Ltd.
2. Muddasir M.G. Aidaraliev A.A. Political Economy of Health and Development. 2013. Sage Publications Ltd.

Lecture #3: The characteristics of the scientific approach. Regular review and Meta-analysis of research

Learning outcomes: After the class, students should know that systematic reviews and meta-analyses present results by combining and analyzing data from different studies conducted on similar research topics.

Key questions covered Class #3:

1. Conducting systematic reviews and meta-analyses to help standardize them and improve their quality
2. Meta-analysis is a valid, objective, and scientific method of analyzing and combining different results.
3. Summarizing and analyzing articles by using Meta-analyses approach. Articles:
 - a) R.Sataloff, M.Bush, R.Chandra. Systematic and other reviews: Criteria and complexities;
 - b) G. Tawfik, K. Dila, M. Mohamed. A step by step guide for conducting a systematic review and meta- analysis with simulation data.
4. The quality of reporting of Meta-analyses.

Required readings:

1. Sarah Tracy. Qualitative Research Methods. 2020. Wiley.
2. N.Bruce, D.Pope, D.Stanistreet. Quantitative Methods for Health Research. 2018. Qualitative Research in Health Care.
3. R.Sataloff, M.Bush, R.Chandra. Systematic and other reviews: Criteria and complexities. World Journal of Otorhinolaryngology-Head & Neck Surgery. (2021) 7, 236-239. Chinese Medical Association. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8356193/#:~:text=Depending%20on%20the%20research%20questi on,the%20appropriate%20data%20were%20accessed.>
4. G. Tawfik, K. Dila, M. Mohamed. A step by step guide for conducting a systematic review and meta-analysis with simulation data. Tropical Medicine and Health. (2019) 47-46. <https://tropmedhealth.biomedcentral.com/articles/10.1186/s41182-019-0165-6#Fig1>

Recommended readings:

3. R.Riegelman, B.Kirkwood. Public Health 101. 2019. Sage Publications Ltd.
4. Muddasir M.G. Aidaraliev A.A. Political Economy of Health and Development. 2013. Sage Publications Ltd.

Lecture #4: Identify the major research methodologies. Calculations in the process of research. The difference in measurement indicators: objectivity and validity

Learning outcomes: After the class, students should know the fundamentals of research design and QR cycle and should be able:

- to determine the design of their research
- to formulate research questions for their research project.

Key questions covered Class #4:

1. Introduction to qualitative and quantitative research design
2. Research questions
3. Research designs: some examples
4. Problems with design typologies
5. Influences on research design
6. Data collection/generation and analysis methods
7. Practical issues
8. Multi-method designs: the place of qualitative work in larger health research studies

Required readings:

1. Sarah Tracy. Qualitative Research Methods. 2020. Wiley.
2. N.Bruce, D.Pope, D.Stanistreet. Quantitative Methods for Health Research. 2018. Qualitative Research in Health Care.

Recommended readings:

1. R.Riegelman, B.Kirkwood. Public Health 101. 2019. Sage Publications Ltd.
2. Muddasir M.G. Aidaraliev A.A. Political Economy of Health and Development. 2013. Sage Publications Ltd.

Lecture #5: Sampling Methods. Data Collection for Quantitative Designs

Learning outcomes: After the class, students should be able

- to select the sampling methods;
- to minimize research bias in your work;
- to prepare and conduct a sample frame.

Key questions covered Class #5:

1. Types of sampling methods:
 - Probability sampling
 - Non-probability sampling
2. Conducting the sample frame.
3. Simple random sample
4. Systematic sampling
5. Stratified sampling

Required readings:

1. Sarah Tracy. Qualitative Research Methods. 2020. Wiley.
2. Uwe Flick. Designing Qualitative Research. 2007. SAGE Publications Ltd.

Recommended readings:

1. R.Riegelman, B.Kirkwood. Public Health 101. 2019. Sage Publications Ltd.
2. Muddasir M.G. Aidaraliev A.A. Political Economy of Health and Development. 2013. Sage Publications Ltd.

Unit № 2. Database for scientific research

Lecture #6: Entering, Organizing and Analysing Quantitative Data

Learning outcomes: After the class, students should be able:

- organizing and preparing the data;
- coding: what it is and how to start;
- focusing the data analysis;
- synthesizing activities: memos, negative cases, and analytic outlines

Key questions covered Class #6

1. Thoughts and ideas about the emerging analysis.
2. Methods section draft
3. Analytic memos
4. Analytic asides

Required Readings:

1. Sarah Tracy. *Qualitative Research Methods*. 2020. Wiley.
2. Uwe Flick. *Designing Qualitative Research*. 2007. SAGE Publications Ltd.
3. N.Bruce, D.Pope, D.Stanistreet. *Quantitative Methods for Health Research*. 2018. *Qualitative Research in Health Care*.

Recommended readings:

1. Amy E. Carusa Broam, T.R.Hobart, C.B.Morrow. *Bioethics, Public Health, and Social Sciences for the Medical Professions*. 2019. Oxford University Press.
2. R.Riegelman, B.Kirkwood. *Public Health 101*. 2019. Sage Publications Ltd.
3. Muddasir M.G. Aidaraliev A.A. *Political Economy of Health and Development*. 2013. Sage Publications Ltd.

Lecture #7: Qualitative Designs. Data Collection, Entering and Analyzing Qualitative Data

Learning outcomes: After the class, students should:

- know grounded theory and explain its essence,
- know principles, approaches and styles of analysis,
- be able to do provide content analysis of qualitative data,
- be able to provide framework analysis of qualitative analysis.

Key questions covered Class #7:

1. Approaches to analysis
2. Styles of analysis
3. Relating analysis to the aims of the study
4. Principles of different approaches
5. Thematic content analysis
6. Main concept of data collection
7. Grounded theory
8. Framework analysis
9. Using computer software to help manage data
10. Rigour in analysis
11. Rigour is not enough
12. Generalizability and transferability

Required Readings:

1. Sarah Tracy. *Qualitative Research Methods*. 2020. Wiley.
2. Uwe Flick. *Designing Qualitative Research*. 2007. SAGE Publications Ltd.
3. N.Bruce, D.Pope, D.Stanistreet. *Quantitative Methods for Health Research*. 2018. *Qualitative Research in Health Care*.

Recommended readings:

1. Amy E. Carusa Broam, T.R.Hobart, C.B.Morrow. *Bioethics, Public Health, and Social Sciences for the Medical Professions*. 2019. Oxford University Press.
2. R.Riegelman, B.Kirkwood. *Public Health 101*. 2019. Sage Publications Ltd.
3. Muddasir M.G. Aidaraliev A.A. *Political Economy of Health and Development*. 2013. Sage Publications Ltd.

Lecture #8: Quantitative and Qualitative Study Results. Discussion

Learning outcomes: After the class, students should:

- know how creating a credible, ethical, significant study;
- move beyond objectivity, reliability, and formal generalizability;
- know how to use at the practice eight “big tent” criteria for high quality qualitative research
- know why and how to use documents according to study results in qualitative research in public health;
- know what documentary sources can be used in QR in public health;
- be able to use documentary sources in their QR.

Key questions covered Class #8:

1. Importance of good study results of QR
2. Objectivity, reliability, and formal generalizability
3. Eight “big tent” criteria for high quality qualitative research

4. Crystallization or triangulation
5. Why use existing sources?
6. Public records
7. Personal documents
8. Mass media outputs
9. Research outputs

Required Readings:

1. Sarah Tracy. *Qualitative Research Methods*. 2020. Wiley.
2. Uwe Flick. *Designing Qualitative Research*. 2007. SAGE Publications Ltd.
3. N.Bruce, D.Pope, D.Stanistreet. *Quantitative Methods for Health Research*. 2018. *Qualitative Research in Health Care*.

Recommended readings:

1. Amy E. Carusa Broam, T.R.Hobart, C.B.Morrow. *Bioethics, Public Health, and Social Sciences for the Medical Professions*. 2019. Oxford University Press.
2. R.Riegelman, B.Kirkwood. *Public Health 101*. 2019. Sage Publications Ltd.
3. Muddasir M.G. Aidaraliev A.A. *Political Economy of Health and Development*. 2013. Sage Publications Ltd.

Lecture #9: Presentation of the research results. Publication of research achievements and results

Learning outcomes: After the class, students should:

- know principles and rules of writing research report;
- be able to write and present a study results in the research report;
- be able to prepare a manuscript for a publication;
- know appraisal criteria.

Key questions covered Class #9:

1. Introduction. The writing process and obtaining the study results
2. Writing a research report
3. Writing about a variable
4. Different referencing systems
5. Writing for health journal
6. How to write a bibliography?

Required Readings:

1. Ranjit Kumar. *Research Methodology: a step-by-step guide for beginners*. 2011. SAGE Publications Ltd.
2. Sarah Tracy. *Qualitative Research Methods*. 2020. Wiley.

Recommended readings:

1. Amy E. Carusa Broam, T.R.Hobart, C.B.Morrow. *Bioethics, Public Health, and Social Sciences for the Medical Professions*. 2019. Oxford University Press.
2. R.Riegelman, B.Kirkwood. *Public Health 101*. 2019. Sage Publications Ltd.
3. Muddasir M.G. Aidaraliev A.A. *Political Economy of Health and Development*. 2013. Sage Publications Ltd.

Methodological instructions for the implementation of independent work on the discipline

Unit №	Theme of independent work	Works	Date
1	Getting Started Your Research. Research Methods	<ul style="list-style-type: none"> • Prepare and compose an abstract on the proposed topics. • Preparation of lecture notes and practical exercises. • Working with literature 	14
2	Data Collection and Analysis	<ul style="list-style-type: none"> • Prepare and compose an abstract on the proposed topics. • Preparation of lecture notes and practical exercises. • Working with literature 	10
	Total		24