Національний технічний університет України
«КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ
імені ІГОРЯ СІКОРСЬКОГО»

ЗБАГАЧУЄМО КОЖНОГО
КАФЕДРА СОЦІОЛОГІЇ

Department of Sociology

Methodology and Methods of Sociological Research in the Digital Age

Curriculum (Syllabus)

Course details

Level of higher education	Second (Master's)
Field of knowledge	C - social sciences, journalism, information and international relations
Specialisation	C5 Sociology
Educational programme	Social Data Analytics
Status of discipline	Mandatory
Form of study	Full-time (day)
Year of study, semester	1st year, 1st semester
Scope of the discipline	5.0 ECTS credits/150 hours: lectures – 30 hours, seminars – 30 hours, independent work – 90 hours.
Semester control/control measures	Exam / Modular control work / Calculation assignments
Class schedule	https://schedule.kpi.ua/
Language of instruction	Ukrainian
Information about the course leader / lecturers	Lecturer and practical training: Associate Professor, Candidate of Philosophical Sciences, Associate Professor, Ihor Viktorovych Pyholenko, e-mail: pigolenko@gmail.com
Course location	Link to the Moodle distance learning resource: https://do.ipo.kpi.ua/course/view.php?id=6890

Curriculum

1. Description of the academic discipline, its purpose, subject matter and learning outcomes

The purpose of **the academic discipline** is to master the methodology and basic methods of conducting sociological research in the digital age. To acquire theoretical knowledge and practical skills in the field of methodology and basic methods of conducting sociological research. To develop an understanding of the theoretical principles of the basic methods of collecting sociological information and practical skills in creating a sociological research programme.

The **subject** of the discipline is the basic concepts and methodological foundations of empirical sociological research, from the justification of the research concept to the argumentation of the reliability of its results.

While studying this discipline, students will be able to familiarise themselves with the methodological and methodical aspects of preparing a sociological research programme. The theoretical and methodological foundations of the selective survey method will be considered, which aims to provide students with knowledge of methods of collecting information in quantitative and qualitative sociological research, the stages of programming and implementing empirical sociological research, as well as techniques that ensure the reliability of primary sociological information. The combination of theoretical

and empirical sociological knowledge allows for the creation of a systematic view of the patterns and trends of social processes and the prediction of future developments.

Interdisciplinary connections: the knowledge gained by students in the course "Methodology and Methods of Sociological Research in the Digital Age" can be used not only in the study of specialised disciplines, but also in practical activities.

Competencies acquired during the study of the discipline:

General competencies:

- ability to think abstractly, analyse and synthesise (GC 01);

Professional competences:

- ability to identify, diagnose and interpret social problems of Ukrainian society and the global community (PC 02);
- ability to design and conduct sociological research, develop and justify its methodology (PS 03);
- ability to collect and analyse empirical data using modern methods of sociological research (PC 04).
- the ability to adhere to the norms of professional ethics of a sociologist in their activities and be guided by universal human values (FC 06).

Programme learning outcomes:

- diagnose and interpret social problems of Ukrainian society and the global community, their causes and consequences (LR 02);
- apply scientific knowledge, sociological and statistical methods, digital technologies, and specialised software to solve complex problems in sociology and related fields of knowledge (LR 04);
- resolve ethical dilemmas in accordance with the norms of professional ethics of a sociologist and universal human values (LR 07);
- plan and carry out scientific research in the field of sociology, analyse results, and justify conclusions (PR 09).
- summarise the results of their own scientific research and present them in scientific reports and publications (PR 11);
- apply modern methods of sociological research in the context of the digitalisation of social relations (PR 13).

2. Prerequisites and post-requisites of the discipline (place in the structural-logical scheme of training under the relevant educational programme)

Prerequisites. To successfully study the discipline "Methodology and Methods of Sociological Research in the Digital Age," students must have knowledge and skills in using Excel. In addition, it is also desirable to have basic skills in working with specialised software for processing and analysing quantitative social information (e.g., OSA, PSPP, R).

In parallel, "Methodology and Methods of Sociological Research in the Digital Age" **is studied** with the following educational components: "Analytical Sociology and Social Behaviour: Contemporary Approaches," "Computer Analysis of Social Information and Data Visualisation."

Post-requisites. After completing the course "Methodology and Methods of Sociological Research in the Digital Age," students will be able to continue their studies or perform research tasks within the educational component "Master's Thesis."

These disciplines form a logical sequence of learning that contributes to the development of analytical and research competencies of students.

3. Contents of the academic discipline

Topic 1. The sociological research programme as a scientific document.
Topic 2. Sociological research programme. Problem, object and subject of research.
Topic 3. Sociological research programme. Research goals, objectives and hypotheses.
Topic 4. Sociological research programme. Interpretation and operationalisation of key concepts.

Topic 5. Classification of methods for collecting sociological information
Topic 6. Measurement in sociology.
Topic 7. Tools of sociological research
Topic 8. The essence of the sampling method.
Topic 9. Methods of probabilistic (random) sampling
Topic 10. Non-probability (non-random) sampling methods
Topic 11. Calculation of sample size.
Topic 12. Research work plan.
Topic 13. Use of artificial intelligence in preparing a sociological research programme
Topic 14. Social networks and big data: how AI is changing digital sociology
Topic 15. Application of NLP (natural language processing) in text data analysis

4. Teaching materials and resources

To successfully study the discipline, it is sufficient to work through the educational material presented in lectures and familiarise yourself with the literature.

4.1. Basic literature

1.Research Design: Approaches Based on Qualitative, Quantitative, and Mixed Methods / Translated by Ihor Kobel, Taras Kobel. Lviv: Ukrainian Catholic University Press, 2022. 284 p.
2.Comprehensive measurement tools in sociological research: development, adaptation, validity justification [E. Golovakha, S. Dembitsky, N. Panina et al.]; edited by E. Golovakha and S. Dembitsky. Kyiv. Institute of Sociology of the National Academy of Sciences of Ukraine. 2022. 405 p.
3.Lupan I. V. Selective surveys in psychology, sociology and pedagogy: a textbook. Kropyvnytskyi: V. F. Lysenko, 2019. 191 p.
4.Sidorov M. V. Mathematics for Sociologists: A Textbook. Kyiv: Karavela, 2019. 420 p.
5.Tulenkov M. V. Systems Theory and Systems Analysis in Sociology: Textbook. Kyiv: Karavela, 2020. 595 p.

4.2. Additional literature:

1.Biryukova, M. V. Mobile messengers as technologies of modern self-interaction in the focus of digital sociology / M. V. Biryukova // Bulletin of NTUU "KPI". Political Science. Sociology. Law: collection of scientific works. 2019. No. 4 (44). P. 8–12.
2.Bogdan O. What should you know about sociology and social research? : a handbook for community activists and anyone interested. Kyiv: Dukh i Litera, 2015. 376 p.
3.Gavrilyuk, O. P. (2023). Analysis of social network ratings in the world and Ukraine. Young Scientist. https://molodyivchenyi.ua/omp/index.php/conference/catalog/download/56/895/1869-1
4.Gorbachik, A. P. Analysis of sociological research data using SPSS: Textbook / A. P. Gorbachik, S. A. Salnikova. – Lutsk: Vezha; Volyn National University named after Lesya Ukrainka, 2008. – 164 p.
5.Dubas, M.O. (2023). War, the COVID-19 pandemic and online research methodologies in sociology: research challenges and current trends. Statement of the problem. Current issues in philosophy and sociology, 138-143. http://www.apfs.nuoua.od.ua/archive/40_2023/40_2023.pdf#page=138
6.Kislova O.M., Kuzina I.I. Methods of analysis and computer processing of sociological information. Kharkiv: V.N. Karazin Kharkiv National University Press, 2020. 165 p. https://core.ac.uk/download/pdf/420735720.pdf
7.Kislova, O. M. (2019). Big data in the context of researching contemporary society issues. Bulletin of V. N. Karazin Kharkiv National University. Series "Sociological research of contemporary society: methodology, theory, methods," (42), 59-68. https://www.researchgate.net/profile/Olga-Kislova-2/publication/339229081_Veliki_dani_v_konteksti_doslidzenna_problem_sucasnogo_suspilstva/links/5e44f19c92851c7f7f341c82/Veliki-dani-v-konteksti-doslidzenna-problem-sucasnogo-suspilstva.pdf
8.Negrei, M., Gnot, T. Analytics 3 R: textbook Kyiv: Yamchynskyi, O.V., 2020. 236 p.
9.Pygolenko, I. V. Ensuring the quality of the field stage of research when conducting sociological

surveys / Pygolenko I. V. // Bulletin of NTUU "KPI". Political Science. Sociology. Law: collection of scientific works. 2021. No. 2 (50). P. 22-27.
10. Cherednichenko, O. Yu. Research on social network user profiles / O. Yu. Cherednichenko, V. V. Tkachenko, M. A. Vovk, O. O. Masikhnovich // Collection of scientific works of the Kharkiv National University of Air Forces. 2018. No. 2. P. 113-119. – Access mode: http://nbuv.gov.ua/UJRN/ZKhUPS_2018_2_18
11. Yakovlev M. V. & Dubas, M. O., Kupka, O. V. (2023). Digital sociology and the post-information society: methodological challenges and research perspectives. Habitus, (55), 33-38. http://habitus.od.ua/journals/2023/55-2023/5.pdf
12. Au, A. (2018). Sociology and science: The making of a social scientific method. The American Sociologist, 49(1), 98-115. https://link.springer.com/article/10.1007/s12108-017-9348-y
13. Edelmann, A., Wolff, T., Montagne, D. & Bail, C.A. (2020). Computational Social Science and Sociology, (46), 61-81. https://www.annualreviews.org/content/journals/10.1146/annurev-soc-121919-054621
14. Gallup G.H. The Gallup poll: Public opinion, 1972-1977 / 2 Vols. Wilmington: Scholarly Resources, 1978.
15. Hall, N. A. (2022). Understanding Brexit on Facebook: Developing close-up, qualitative methodologies for social media research. Sociological Research Online, 27(3), 707-723. https://journals.sagepub.com/doi/full/10.1177/13607804211037356
16. Luo, J. D., Liu, J., Yang, K., & Fu, X. (2019). Big data research guided by sociological theory: a triadic dialogue among big data analysis, theory, and predictive models. The Journal of Chinese Sociology, 6(1), 11. https://scholar.google.com/scholar?output=instlink&q=info:MCWQUdqkw8cJ:scholar.google.com/&hl=en&as_sdt=0,5&scillfp=13539162575221047244&oi=lle
17. Macanovic, A. (2022). Text mining for social science–The state and the future of computational text analysis in sociology. Social Science Research, 108, 102784. https://www.sciencedirect.com/science/article/pii/S0049089X22000904
18. Manago, B. (2023). Preregistration and registered reports in sociology: Strengths, weaknesses, and other considerations. The American Sociologist, 54(1), 193-210. https://link.springer.com/article/10.1007/s12108-023-09563-6
19. Menshikova, A., & van Tubergen, F. (2022). What drives anti-immigrant sentiments online? a novel approach using twitter. European Sociological Review, 38(5), 694-706. https://academic.oup.com/esr/article/38/5/694/6523885
20. Naresh Malhotra Marketing Research: An Applied Orientation, Georgia Institute of Technology, 2019.
21. Seymour Sudman, Norman Bradburn Asking Questions: A Practical guide to Questionnaire Design, San Francisco, Jossey-Bass Publishers, 1982.
22. Tong, G., & Guo, G. (2022). Meta-analysis in sociological research: Power and heterogeneity. Sociological Methods & Research, 51(2), 566-604. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9231456/

Educational content

5. Methodology for mastering the academic discipline (educational component)

Lectures

Lectures using informative and receptive methods, heuristic discussions, elements of educational discussion, and elements of problem-based presentation of material.

Multimedia equipment and computers are used in classes. Distance learning uses Zoom and/or Google Meet video conferencing services, the Google Classroom educational web service on the Sikorsky platform, messengers for communication with students, and the university's Electronic Campus information and communication system software.

Lecture 1. The sociological research programme as a scientific document.

Stages and procedures of sociological research. The sociological research programme is the main document that includes the prerequisites for scientific research. The programme as the organisational basis of research. The main types of sociological research (theoretical-applied and applied). The specifics of programme

development depending on its type. Sections of the programme. Internal and external functions of the programme.
Assignment for independent study: What are the main types of empirical research? What are their specific features? What methodological and methodical functions do the outline and programme of sociological research perform? Draw a diagram of the structure of a sociological research programme.
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 9, 14, 22

Lecture 2. Sociological research programme. Problem, object and subject of research.
Formulating the problem is the starting point for developing the programme. Theoretical and applied problems. Main requirements for developing the research problem. Object and subject of research, their purpose. Requirements for the object of research. Object of research and units of observation. The concept of typology.
Assignment for independent study: What are the main elements that a sociological research programme should contain? What is a social indicator? What is a "problem"? Name the main characteristics of a production problem. How are the object and subject of sociological research related to each other? Give an example of this relationship.
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 9, 14, 22

Lecture 3. Sociological research programme. Research goals, objectives and hypotheses.
Setting research goals as an orientation towards its final result. Theoretical, applied and practical research goals. Research objectives. Sequential setting of program objectives depending on the main goal of the research. Methodological objectives. Hypothesis – the main methodological tool of sociological research. Source of hypothesis formulation. Logical structure of a hypothesis and principles of its construction. Types of hypotheses in sociological research. Main hypothesis and consequence hypotheses. Descriptive and explanatory hypotheses. Justification and possibility of empirical verification of hypotheses. Dependence of the type of sociological research on the hypothesis. General requirements for a hypothesis.
Assignment for independent study: What is a "hypothesis" in sociology? What types of hypotheses do you know? Formulate the purpose, objectives and hypotheses of a sociological study of crime and its main causes.
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 9, 14, 22

Lecture 4. Sociological research programme. Interpretation and operationalisation of key concepts.
Identification of the main concepts of the study. Interpretation of concepts as a procedure for explaining them, clarifying their content, which forms the conceptual framework of the study. Types of interpretation of key concepts (theoretical, empirical, operational). The essence of interpretation, key procedures. Regulatory requirements for interpretation procedures. Preliminary systematic analysis of the object of study.
Assignment for independent study: What is the essence of theoretical interpretation and operationalisation of concepts? How are these concepts related? Give an example of a multi-level interpretation of the concept of "young people's attitudes towards private entrepreneurship".
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 9, 14, 22

Lecture 5. Classification of methods for collecting sociological information
Classification of methods for collecting sociological information. Criteria for classifying sociological research methods. The relationship between research objectives and methods. Quantitative methods in sociology: their advantages and limitations. Sociological surveys and their types: postal surveys, telephone surveys, individual and group surveys; expert surveys; monitoring surveys as a type of public opinion research; express surveys. Content analysis as a quantitative method of sociological research. Qualitative methods in sociology and their areas of application. Focus group method. In-depth (depth) interview. Sociological experiment. Observation method and its features. Test methods. Cognitive capabilities of each method.
Assignment for independent study: Name the qualitative methods of sociological research. How do you understand the concept of "representativeness"? What role does it play in sociology? What methods of sociological research has sociology borrowed from the natural sciences? Name and describe them. Who came up with the idea of using experiments in the social sciences and what does it involve? How do the

strategic and working plans of sociological research relate to each other? What are the main components of the working plan of sociological research? When and in what cases are qualitative methods of sociological research used?
Literature: Main: 1, 2, 3, 4, 5; additional: 1, 2, 5, 9, 14

Lecture 6. Measurement in sociology.
Searching for and constructing a measurement standard. Checking the reliability of primary measurement procedures. Characteristics of the main scales (nominal, ordinal, interval, ratio). Guttman and Thurstone scales. Limitations of quantifying primary social characteristics.
Assignment for independent study: Give an example of a nominal scale. What mathematical transformations are possible when using nominal scales? What is the difference between the concepts of "variable" and "feature"?
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 5, 9, 14

Lecture 7. Tools of sociological research
Logical and organisational structure of a questionnaire. Classification of questionnaire questions. General and specific questions. Use of filter questions. Questions in table form. Contact and buffer questions. Main functions of questions (indicative, communicative and measuring). Addressing the respondent and instructions for completing the questionnaire. Demographic section of the questionnaire. Types and prevention of errors related to violations of the logical structure of the question (suggestion effect, inconsistency of the respondent's awareness, biased questions, inadequacy of the addressee designation). The funnel rule. Requirements for questionnaire questions. Problems arising during the survey (the problem of non-respondents, the problem of respondent insincerity, the problem of "poor field quality", ethical problems). Composition and technical design of the questionnaire. Graphic design. Pilot testing of the questionnaire.
Assignment for independent study: What is the requirement for unambiguous questionnaire questions? Briefly describe the main errors in wording. What is the significance of filter questions? Name the advantages and disadvantages of open-ended questions.
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 5, 14, 21

Lecture 8. The essence of the sampling method.
The concept of sampling. Selective study of the concept of the general and sample populations. Parameters of the general and sample populations. Sampling methods. Sample structure.
Comparison of the average indicators of the distribution of the sample and general populations. Comparison of distribution forms of indicators. Calculation of variance, mode, median and normal distribution. Variance indicators in the general and sample populations. Representativeness errors. The impact of representativeness errors on the results of a scientific report.
Assignment for independent study: Define the concepts of "general population," "sample population," and "representativeness." How do the concepts of "reliability" and "validity" relate to each other? What should the author of the sample design take into account first when determining the minimum size of the sample population?
Literature: Main: 1, 2, 3, 4, 5; additional: 1, 2, 5, 16

Lecture 9. Methods of probability (random) sampling
The concept of probability (random) sampling. Methods of probability sampling.
Simple random sampling. Systematic sampling. Cluster sampling. Stratified sampling.
Assignment for independent study: What is the essence of the zoning principle? How does the cluster (nest) method of preliminary classification of an object differ from zoning (stratification)?
Literature: Main: 1, 2, 3, 4, 5; additional: 1, 2, 5, 16

Lecture 10. Non-probability (non-random) sampling methods
The concept of non-probability (non-random) sampling. Types of non-random sampling. Quota sampling. Snowball sampling. Master list sampling. Random sampling. Types of non-probability sampling. Targeted sampling. Random sampling.
Assignment for independent study: List the most common types of purposeful approaches to sample

construction.
Literature: Main: 1, 2, 3, 4, 5; additional: 1, 2, 5, 16

Lecture 11. Calculating sample size.
Sample size. Types of samples: small, very small samples. Factors affecting sample size. Preliminary calculation strategy. Sequential calculation strategy. Combined strategy. Confidence interval. Confidence probability. The concept of sampling error. Random and systematic errors. Ways to avoid sampling errors. The concept of sampling control and repair. Correction of the sampling frame. Correction of demographic characteristics distributions. Weighting of source data. Correction of outliers in respondents' answers. Correction of missing answers.
Assignment for independent study: How do random errors differ from systematic errors? What is a representativeness error? What methods are used to correct the sample population? Weighting as a way of making the sample population correspond to the general population.
Literature: Main: 1, 2, 3, 4, 5; additional: 1, 2, 5, 16

Lecture 12. Research work plan.
Drawing up a work plan – includes deadlines for different stages, resource allocation, identification of responsible persons and their duties, possible risks and ways to minimise them. Drawing up a work plan is the final and practically oriented stage of a sociological research programme. Its main task is to ensure organisational clarity and the actual feasibility of the research project within the time, budget and available resources.
Task for SRC: What are the main components of a sociological research work plan? You are to conduct a sociological study of students' attitudes towards learning. Which strategic plan option would you choose and why?
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 5, 9, 14

Lecture 13. Using artificial intelligence in preparing a sociological research programme
This lecture examines how AI tools can be applied at various stages of preparing a sociological research programme – from problem formulation and hypothesis formulation to the selection of data collection and analysis methods. The possibilities of using generative models (e.g., ChatGPT), automatic literature analysis, topic classification, social phenomenon prediction, etc. are analysed.
Assignment for independent study: Generate a preliminary research programme structure using ChatGPT or Elicit.org – select a topic, formulate the goal, objectives, hypotheses, method, and tools.
Literature: Main: 1, 2, 3, 4, 5; additional: 11, 12, 15, 16

Lecture 14. Social networks and big data: how AI is changing digital sociology
New sources of social information are considered — social networks, digital traces of users, metadata — and ways to analyse them. Particular attention is paid to the role of AI in the collection, processing, and interpretation of large data sets: automation of the identification of trends, behavioural patterns, network structures. The use of AI in behavioural research on Facebook, Instagram, TikTok, etc. The role of models in identifying trends, clusters, and information campaigns. The methodological and ethical challenges of digital sociology are also discussed.
Assignment for independent study: What place does Big Data occupy in modern social analysis? What are the advantages and limitations of "big data" in the study of society? What is the problem with the representativeness of data from social networks? Is it possible to draw general conclusions based on data from Facebook, Instagram or X (Twitter)?
Literature: Main: 1, 2, 3, 4, 5; additional: 11, 12, 15, 16

Lecture 15. Application of NLP (natural language processing) in text data analysis
Natural Language Processing (NLP) is a branch of artificial intelligence that allows computers to "understand", interpret and analyse human language. Main areas of application of NLP in sociology. Sentiment analysis: Determining positive, negative or neutral sentiments in texts (e.g., in tweets about social phenomena). Topic modelling: Identifying hidden topics in text corpora (interviews, forums, comments). Word and phrase frequency analysis (frequency analysis): Identifying key concepts and social "signs of the times". Analysis of social narratives and discourse: Studying linguistic constructions that reproduce

hierarchies, norms, and power. Analysis of network dissemination of messages: How ideas, slogans, and hashtags spread and resonate on social networks.
Assignment for independent study: What types of text data can be a source of sociological information? What are the advantages of such sources compared to questionnaires or interviews? Can NLP replace classical methods of sociological research? In what cases is it appropriate to combine both approaches?
Literature: Main: 1, 2, 3, 4, 5; additional: 11, 12, 15, 16

Seminar (practical) classes

Didactic methods, observation and comparison, generalisation and abstraction, analogy, induction, deduction, analysis and synthesis, analytical-synthetic, abstract-deductive, concrete-inductive, explanatory-illustrative, reproductive, partial-search, research methods.

Multimedia equipment and computers are used in classes. Distance learning uses Zoom and/or Google Meet video conferencing services, the Google Classroom educational web service on the Sikorsky platform, messengers for communication with students, and the university's Electronic Campus information and communication system software.

Seminar 1. The sociological research programme as a scientific document.
1. Sociological research programme: essence, functions.
2. Main types of sociological research.
3. Specifics of programme development depending on the type of sociological research.
4. Main sections of the programme.

Assignment for independent study: What are the main types of empirical research? What are their specific features? What methodological and methodical functions do the outline and programme of sociological research perform? Draw a diagram showing the structure of a sociological research programme.
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 9, 14, 22

Seminar 2. Programme of sociological research. Problem, object and subject of research.
1. Problem situation and problem.
2. Main requirements for formulating the research problem.
3. Theoretical and applied problems.
4. Subject of research.
5. Object of research. Object of measurement and measurement of the object.
6. Units of observation.

Assignment for independent study: What are the main elements that a sociological research programme should contain? What is a social indicator? What is a "problem"? Name the main characteristics of a production problem. How are the object and subject of sociological research related to each other? Give an example of this relationship.
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 9, 14, 22

Seminar 3. Sociological research programme. Research goals, objectives and hypotheses.
1. Theoretical-applied and applied research objectives.
2. Research tasks.
3. Hypotheses: logical structure, principles of construction.
4. Types of hypotheses in sociological research.
5. Main requirements for hypotheses.

Assignment for independent study: What is a "hypothesis" in sociology? What types of hypotheses do you know? Formulate the purpose, objectives and hypotheses of a sociological study of crime and its main causes.
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 9, 14, 22

Seminar 4. Sociological research programme. Interpretation and operationalisation of key concepts.
1. Identification of key concepts.

2. Interpretation of concepts: the essence of the procedure.
3. Types of interpretation and their functions.
4. Theoretical interpretation of key concepts.
5. Typical errors in theoretical interpretation.
6. Empirical interpretation.
7. Operationalisation of key concepts.
8. The concept of "indicator" in sociology.

Assignment for independent study: What is the essence of theoretical interpretation and operationalisation of concepts? How are these concepts related? Give an example of a multi-level interpretation of the concept of "young people's attitudes towards private enterprise".

Literature: Main: 1, 2, 3, 4, 5; additional: 2, 9, 14, 22

Seminar 5. Classification of methods for collecting sociological information

1. Classification of methods for collecting sociological information: qualitative and quantitative paradigms.
2. Quantitative methods in sociology: their advantages and limitations.
3. Qualitative methods in sociology and their areas of application.
4. Methods of collecting sociological information and their characteristics.

Assignments for independent study: Specifics of scientific observation. Social experiment. Document analysis: regulatory requirements, types of documents. Content analysis: current state and prospects.

Literature: Main: 1, 2, 3, 4, 5; additional: 1, 2, 5, 9, 14

Seminar 6. Measurement in sociology.

1. Measurement in sociology: features of application.
2. Reliability of measurement.
3. Types of scales and their characteristics.
4. Guttman and Thurstone scales.

Assignment for independent study: Give an example of a nominal scale. What mathematical transformations are possible when using nominal scales? What is the difference between the concepts of "variable" and "feature"?

Literature: Main: 1, 2, 3, 4, 5; additional: 2, 5, 9, 14

Seminar 7. Tools of sociological research.

1. Logical and organisational structure of a questionnaire.
2. Classification of questionnaire questions.
3. Questions in the form of tables.
4. Main functions of questions (indicative, communicative and measuring).
5. Addressing the respondent and instructions for completing the questionnaire.
6. Demographic section of the questionnaire.

Assignment for independent study: What is the requirement for unambiguous questionnaire questions? Briefly describe the main errors in wording. What is the significance of filter questions? Name the advantages and disadvantages of open-ended questions.

Literature: Main: 1, 2, 3, 4, 5; additional: 2, 5, 14, 21

Seminar 8. The essence of the sampling method.

1. Selective research: the concepts of general and selective populations.
2. Parameters of the general and sample populations.
3. Representativeness of the sample.
4. Sample structure.
5. Representativeness errors.
6. The impact of representativeness errors on the results of a scientific report.

Assignment for independent study: Define the concepts of "general population," "sample population," and "representativeness." How do the concepts of "reliability" and "validity" relate to each other? What should the author of the sampling project consider first when determining the minimum size of the sample population?

Literature: Main: 1, 2, 3, 4, 5; additional: 1, 2, 5, 16

Seminar 9. Methods of probability (random) sampling
1. The concept of probability (random) sampling.
2. Methods of forming a probability sample.
3. Simple random sampling.
4. Systematic selection.
5. Cluster selection.
6. Stratified selection.

Assignment for independent study: What is the essence of the zoning principle? How does the cluster (nest) method of preliminary classification of an object differ from zoning (stratification)?

Seminar 10. Non-probability (non-random) sampling methods
1. The concept of non-probability (non-random) sampling.
2. Quota sampling.
3. Snowball sampling method.
4. The basic array method.
5. The method of spontaneous selection.
6. Target selection.
7. Random selection.

Homework assignment: List the most common types of targeted approaches to sample construction.
Literature: Main: 1, 2, 3, 4, 5; additional: 1, 2, 5, 16

Seminar 11. Calculating sample size.
1. Sample size.
2. Types of samples: small, very small sample.
3. Factors affecting sample size.
4. Preliminary calculation strategy.
5. Sequential calculation strategy.
6. Combined strategy.
7. Concepts of sample control and repair.
8. Correction of the sample population.

Assignment for independent study: How do random errors differ from systematic errors? What is a representativeness error? What methods are used to correct the sample population? Weighting as a way of making the sample population correspond to the general population.
Literature: Main: 1, 2, 3, 4, 5; additional: 1, 2, 5, 16

Seminar 12. Research work plan.
1. Main requirements for organising research.
2. Network research schedule.
3. Typical mistakes in research organisation.
4. Research plan: essence and functions.
5. Types of plans.
6. Main requirements for plan development.

Assignment for independent study: What are the main components of a sociological research work plan? You are to conduct a sociological study of students' attitudes towards learning. Which strategic plan option would you choose and why?
Literature: Main: 1, 2, 3, 4, 5; additional: 2, 5, 9, 14

Seminar 13. The use of artificial intelligence in the preparation of a sociological research programme
1. Which stages of developing a sociological research programme are most sensitive to the influence of AI?
2. Can ChatGPT help in formulating a scientific problem? What are its advantages and limitations?
3. How can artificial intelligence contribute to the generation of questionnaires or interview guides? What are the risks?
4. How can academic integrity be ensured when using AI in writing a research programme?
5. How would you use AI in your own master's thesis? Which stage is most suitable for its involvement?

Assignment for independent study:
Generate a preliminary research proposal structure using ChatGPT or Elicit.org – choose a topic, formulate the goal, objectives, hypotheses, method, and tools.
Literature: Main: 1, 2, 3, 4, 5; additional: 11, 12, 15, 16

Seminar 14. Social networks and big data: how AI is changing digital sociology
1. What social media data can be collected and how can it be analysed?
2. How does AI help identify social groups or behavioural patterns?
3. What social media analysis tools does AI use?
4. What are the methodological limitations of such studies?
5. Does big data replace representative sampling?

Assignment for SRC:
What place does big data occupy in modern social analysis? What are the advantages and limitations of big data in the study of society? What is the problem with the representativeness of data from social networks? Is it possible to draw general conclusions based on data from Facebook, Instagram or X (Twitter)?
Literature: Main: 1, 2, 3, 4, 5; additional: 11, 12, 15, 16

Seminar 15. Modular control work

6. Independent work by students/postgraduates

Independent work by the applicant includes:
preparation for classroom sessions – 46 hours;
preparation for group work – 10 hours;
preparation for the modular control work– 4 hours;
preparation for the exam – 30 hours.
Total – 90 hours.
Questions for independent work for students are provided for each lecture and practical assignment.

Policy and control

7. Policy of the academic discipline (educational component)

Attendance and completion of assignments

Students who wish to demonstrate excellent academic performance must actively participate in lectures, but they are not required to make up for missed lectures.

Students will be required to actively participate in practical classes. A student's rating will largely be based on the results of their work in practical (seminar) classes. Each missed practical class (regardless of the reason for the absence) lowers the student's final rating for the discipline.

Students who have missed seminar classes can prevent their final rating from being lowered by studying the relevant topics in a timely manner (during the semester) and completing the assignments for the missed classes. There is no need to wait until the exam session to communicate with the teacher. This should be done as soon as the student is ready to demonstrate their knowledge and skills on the missed topics.

The topics and assignments for practical classes are provided in the Syllabus, available from the student's personal account in the Moodle system.

Laptops and smartphones may be used during lectures and practical classes, but only for purposes related to the topic of the class and the relevant thematic assignment.

During practical classes, students may use written notes they have prepared on the topic of the class (or the task), but reading from a piece of paper reduces the quality of the answer and the grade.

Informal education

At the request of the applicant, in conditions that do not facilitate regular attendance, it is permissible to study individual parts of the discipline in asynchronous mode, in particular through distance learning courses and other forms of informal learning. In order for the points for such courses to be taken into account in the rating system, they must correspond in content to certain topics of the syllabus, and their completion must be agreed with the teacher of the discipline. To confirm completion of informal learning, the student must provide a relevant document (certificate) indicating the name of the courses and their duration in hours. Recognition of the results of informal education takes place in accordance with the procedure set out in the relevant Regulations of Igor Sikorsky KPI: https://osvita.kpi.ua/node/179.

In particular, we recommend taking the online course "Sociology and Social Research: What, How, Why?" The course is available on the Prometheus educational platform at: https://apps.prometheus.org.ua/learning/course/course-v1:IRF+SOC101+2015_T1/home.

University policy

Academic integrity

The policy and principles of academic integrity are defined in Section 3 of the Code of Honour of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". For more details, see: https://kpi.ua/code.

(other necessary information regarding academic integrity)

Standards of ethical conduct

The standards of ethical conduct for students and employees are defined in Section 2 of the Code of Honour of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". For more information, please visit: https://kpi.ua/code.

Artificial intelligence policy

The policy on the use of artificial intelligence and its principles are regulated by the order "Policy on the use of artificial intelligence for academic activities at Igor Sikorsky Kyiv Polytechnic Institute". For more details, see: https://osvita.kpi.ua/node/1225.

8. Types of control and the learning outcomes assessment rating system (LOAS)

A student's rating consists of points they receive for:

1) answers in seminars;
2) Calculation assignments;
3) modular control work;
4) exams

1. Answers in seminars.

Weighting score – 2 points for answering one question. The maximum number of points for all seminars is equal to r_{sem} = 2 points*14 = 28 points.

For each question answered, the student receives:

– a complete answer (at least 90% of the required information) if the student demonstrates a deep knowledge of the material, presents it logically and consistently, gives reasoned conclusions, freely operates with specific data, and answers the questions easily and convincingly – 2 points;

– a sufficiently complete answer with minor inaccuracies or an incomplete answer (but not less than 60% of the required information) that answers most of the questions asked – 1 point;

– "unsatisfactory", no work in the seminar – 0 points.

2. Calculation assignments

Weighting score – 12.

Assessment criteria:

- "excellent", the topic is fully covered (at least 90% of the required information), the work is written independently, meets the established requirements and is submitted on time – 11-12 points;
- "good", the topic is not fully covered (at least 75% of the required information), there are minor deviations from the established requirements, submitted on time – 9-10 points;
- "satisfactory", the topic is poorly covered and/or there are significant deviations from the established requirements and/or the work is submitted with a significant delay – 7-8 points;
- "unsatisfactory", the work does not meet the requirements for 6 points – 0-6 points.

3. Modular control work

Weighting – 10 points.

Assessment criteria:

- "excellent", complete answer (at least 90% of the required information) to all questions of the modular control work; the student is well versed in the material presented – 9-10 points;
- "good", the student answered 75% of the questions in the modular control work; answers to all questions in the test require clarification – 7-8 points;
- "satisfactory", the student answered 60% of the questions in the modular control work; answers require significant clarification, insufficient knowledge of the material – 5-6 points;
- "unsatisfactory", the answer does not meet the requirements for 5 points, the student is not familiar with the material, extremely limited answer – 0 points.

4. Exam.

Weighting score – 50.

The exam involves oral answers to questions, a list of which is provided in Appendix 2.

Assessment criteria:

- 40-50 points – the student answers almost all exam questions, demonstrates in-depth knowledge of the material, presents it logically and consistently, gives reasoned conclusions, freely uses specific data, expresses their own position on controversial issues, demonstrates signs of theoretical thinking and sociological imagination;
- 30-39 points – the student answers most of the exam questions, demonstrates a good level of knowledge of the material;
- 20-29 points – the student answers about half of the exam questions, demonstrates rather superficial knowledge;
- 0-19 points – the student answers only some of the exam questions, does not have their own position, and makes significant inaccuracies.

Bonus points (no more than 10 points for all types of work):

●for research activities (participation in conferences, "FSP Science Days", student competitions, publications);

●participation in faculty competitions in academic disciplines and national competitions.

Conditions for a positive interim assessment:

To receive a "pass" on the first interim assessment, a student must have at least 12 points; to receive a "pass" on the second interim assessment, a student must have at least 24 points.

Conditions for admission to the exam:

The condition for a student's admission to the exam is to receive a preliminary rating of at least 24 points.

Table of correspondence between rating points and grades on the university scale:

Rating of the applicant (points)	*University scale of grades for the level of acquired competencies (learning outcomes)*
100-95	Excellent
94	Very good
84	Good
74-65	Satisfactory
64-60	Sufficient
Less than 60	Unsatisfactory

Possible marks in the semester control report:

Not admitted	Failure to meet the conditions for admission to semester control
Removed	Violation of the principles of academic integrity or moral and ethical standards of conduct
Did not appear	The applicant was admitted but did not appear for the exam

Review of the rating system of assessment during the semester

The RSO may be reviewed upon a reasoned request from the applicant studying the OK, the student self-government body or the student trade union committee, submitted to the head of the supporting department. The review procedure is defined in Section 7 of the Regulations on the System of Assessment of Learning Outcomes at Igor Sikorsky KPI https://osvita.kpi.ua/sites/default/files/downloads/Pologennia_RSO_2025.pdf

9. Additional information on the discipline (educational component)

Recommendations for students

As part of the academic discipline "Methodology and Methods of Sociological Research in the Digital Age," lectures and seminars are held accordingly. Lectures are conducted using presentations on basic terms, concepts, and theories, taking into account the topics of the classes. The course includes familiarisation with primary sources and their discussion in seminars. The course also provides for the acquisition of practical skills, namely the preparation of a sociological research programme, tools (questionnaires), and the formation and calculation of a sample.

Seminar classes involve students preparing presentations on specific topics, participating in discussions, expressing their own opinions, etc. The criteria for assessing the completion of seminar tasks are: logical sequence of answers; completeness of each question; analytical reasoning in answers; references to sources; validity of personal conclusions.

When preparing for a seminar, students should study the lecture material on a specific topic and familiarise themselves with additional sources and articles in periodicals. Even well-prepared students should not remain passive observers during the seminar session, but should actively participate in the discussion of the issue. If a student has not familiarised themselves with the course material, they should listen more carefully to the speakers and try to compensate for their lack of preparation for the session with the information they receive. Students should not refuse to answer the teacher's questions. Even if a student does not know the answer, it is advisable to try to answer, express their opinion based on their own knowledge, experience, the logic of the question, etc. A responsible attitude towards preparation for each seminar allows you to understand the issues covered in the course "Methodology and Methods of Sociological Research in the Digital Age".

Extracurricular activities

Students may participate in an informal club for sociologists.

Distance learning

Synchronous distance learning is possible using video conferencing platforms and the university's educational platform for distance learning.

Inclusive learning

Permitted

The working programme of the academic discipline (syllabus) **"**Methodology and methods of sociological research in the digital age**"**

Compiled by Associate Professor, Candidate of Philosophical Sciences, Associate Professor, Ihor Viktorovych Pyholenko

Approved by the Department of Sociology (Minutes No. 14 of 23.06.2025)

Approved by the Methodological Commission of the Faculty of Sociology and Law (Minutes No. 4 of 24 June 2025)

Appendix 1.

Questions for Calculation assignments

Prepare a calculation of a representative sample population for a survey of the population of _____ region*

I. Descriptive characteristics of the _____ region

1.1. Characteristics of the administrative-territorial structure of the region

1.2. Demographic characteristics of the region

1.3. National composition of the _____ region

1.4. Language situation in _____ region

1.5. Social and labour structure

1.6. Socio-professional structure

1.7. Economic characteristics of the region

II. Statistical data for calculating a representative sample population for a survey of the population of _____ region.

III. Calculation of the sample population for the survey of the population of the _____ region

3.1. Calculation of the sample population

3.2. Calculation of the sample population for districts

3.2.1. Calculation of the share of each district in the sample population

3.2.2. Calculation of the number of units in the sample population for each district

3.3. Quota sampling for districts by age and gender (persons)

3.4. Calculation of the share of rural and urban population in districts

3.4.1 Quota allocation for districts by type of settlement (persons in the sample)

3.5. Quota sampling for cities in districts

3.6. Selection of districts for the survey and development of the route

3.7. Calculation of the cost of the survey for one route (using Route I as an example)

**** Select a region of Ukraine as desired and agree with the teacher to avoid duplication***

Appendix 2.

Questions for the Modular control work

1. Secondary employment of students in a crisis-stricken society.
2. European and national identities of modern Ukrainian youth: opportunities for integration.
3. Migration outside Ukraine: scale, causes, consequences and ways to overcome it.
4. Religion for modern youth: a "fad" or the basis of worldview?
5. The level of integration of internally displaced students in their new place of study.
6. Social capital and economic development: implications for Ukrainian society.
7. Current issues in the activities of village elders in Ukraine
8. Internally displaced persons in host communities: adaptation issues.
9. Labour migration of Ukrainian youth: intentions and ways of implementation.
10. Labour values of modern youth in Ukraine: from a society of labour to a society without labour?

Appendix 3.

Exam questions

1. Social and scientific prerequisites for the emergence of empirical sociology.
2. Sociological research as a type of social research.
3. Organisation of research. Main types of sociological research.
4. The main stages of research and the necessary regulatory documents.
5. Sociological research programme: essence, functions.
6. Main types of sociological research.
7. Specifics of programme development depending on the type of sociological research.
8. Main sections of a sociological research programme.
9. Problem situation and problem.
10. Main requirements for formulating the research problem.
11. Theoretical and applied problems.
12. Subject of research.
13. Object of research. Object of measurement and measurement of the object.
14. Units of observation.
15. Theoretical-applied and applied research objectives.
16. Research tasks.
17. Hypotheses: logical structure, principles of construction.
18. Types of hypotheses in sociological research.
19. Main requirements for hypotheses
20. Identification of main concepts.
21. Interpretation of concepts: the essence of the procedure.
22. Types of interpretation and their functions.
23. Theoretical interpretation of key concepts.
24. Typical errors in theoretical interpretation.
25. Empirical interpretation.
26. Operationalisation of key concepts.
27. The concept of "indicator" in sociology.
28. Measurement in sociology: features of application.
29. Reliability of measurement.
30. Types of scales and their characteristics.
31. Guttman and Thurstone scales.
32. The concept of general and selective populations.
33. Representativeness of the sample.
34. Units of observation, units of selection.
35. Logical and organisational structure of a questionnaire.
36. Classification of questionnaire questions.
37. General and specific questions.
38. Use of filter questions.
39. Questions in table form.
40. Contact and buffer questions.
41. Main functions of questions (indicative, communicative and measuring).
42. Addressing the respondent and instructions for completing the questionnaire.
43. Demographic section of the questionnaire.
44. The funnel rule.
45. Requirements for questionnaire questions.
46. Research plan: essence and functions.
47. Types of plans.
48. Main requirements for plan development.
49. Main requirements for organising research.
50. Network research schedule.
51. Typical mistakes in organising research.

52. Selective research: the concepts of general and selective populations.
53. The concept of sampling.
54. Representativeness of the sample.
55. Parameters of the general and sample populations.
56. The concept of a probability (random) sample.
57. The concept of non-probability (non-random) sampling.
58. Types of non-probability sampling: purposive and random sampling.
59. Multistage sampling.
60. Systematic sampling.
61. Stratified sampling.
62. Cluster sampling.
63. Quota sampling.
64. Targeted sampling.
65. Basic array method.
66. Methods for estimating the size of closed groups.
67. Method of estimating numbers based on national survey data.
68. Method of estimating the size using the "capture-recapture" method.
69. Systematic sampling method. Sampling unit.
70. Ideal and real populations.
71. Factors affecting sample size.
72. Confidence interval and confidence probability.
73. General characteristics of sampling error. Random and systematic errors.
74. Ways to avoid sampling errors.
75. The concept of sample control and repair.
76. Correction of the sample population.
77. Ways of describing a sample in scientific publications.
78. Comparison of average indicators of sample and general population distributions.
79. The impact of representativeness errors on the results of a scientific report.
80. The concepts of reliability and validity of sociological information. Stability of the results obtained.