PJSC "Higher Education Institution "INTERREGIONAL ACADEMY OF PERSONNEL MANAGEMENT"

SYLLABUS OF THE ACADEMIC DISCIPLINE «MODERN STATISTICAL APPROACHES IN PSYCHOLOGICAL RESEARCH»

Specialty:	**C4 Psychology**
Educational level:	**second (master's) level**
Educational program:	**Psychology**

MAUP 2025

General information about the academic discipline

Name of the academic discipline	Modern statistical approaches in psychological research
Code and name of specialty	C4 Psychology
Level of higher education	Second (master's) level of higher education
Discipline status	selective
Number of credits and hours	3 credits/90 hours Lectures: 20 hours Practical classes: 14 hours Independent work: 56 hours
Term of study of the discipline	semester
Language of instruction	Ukrainian
Type of final control	credit
Discipline page on the website	

General information about the teacher. Contact information

Academic degree	
Academic title	
Position	
Disciplines taught by the NPP	
Areas of scientific research	
Links to identifier registries for scientists	
Teacher contact information:	
Email:	
Contact phone number	
Teacher's portfolio on the department's website	

Course abstract. The course "Modern Statistical Approaches in Psychological Research" is aimed at forming in higher education students a holistic understanding of statistical analysis as an integral part of scientific psychological research, as well as at developing theoretical and practical readiness to use modern methods of processing and interpreting empirical data. The discipline reveals the scientific and methodological foundations of statistics in psychology, its place in the system of psychological knowledge and its connection with general, social, clinical, age and experimental psychology. Considerable attention is paid to the study of descriptive and inferential statistical methods, correlational, multivariate analysis, as well as modern approaches to testing statistical hypotheses, assessing effects and analyzing the reliability and validity of psychological measurements. The course is focused on developing the professional thinking of a future psychologist, the ability to critically evaluate the results of scientific research, correctly interpret statistical indicators, and integrate quantitative methods of data analysis into research and practical activities in compliance with modern scientific standards and principles of academic integrity.

Subject of study of the academic discipline:patterns and principles of statistical analysis in psychological research; methods of quantitative processing of psychological data; statistical models and approaches to testing scientific hypotheses; indicators of reliability, validity and accuracy of psychological measurements; features of interpretation and presentation of the results of statistical analysis in various branches of psychology.

Course objective:consists in forming in students a system of theoretical knowledge and practical skills regarding the application of modern statistical methods in psychological research, developing the ability to independently process, analyze and interpret empirical data in compliance with scientific standards, methodological correctness and principles of academic integrity.

Objectives of the academic discipline:

1. To familiarize students with the theoretical and methodological principles of statistical analysis in psychology.

2. Formation of ideas about the main statistical methods used in psychological research.

3. Developing skills in selecting statistical procedures according to the purpose of the study and the characteristics of the sample.

4. Mastering the skills of analyzing, interpreting, and summarizing the results of statistical processing of psychological data.

5. Formation of the ability to critically evaluate statistical results of scientific research and correctly present them in scientific and practical works

Prerequisites of the academic discipline. The study of the course "Modern Statistical Approaches in Psychological Research" is based on the knowledge acquired by students during the study of the disciplines "general psychology", "personality psychology", "social psychology", "age psychology", "psychodiagnostics", "methodology and methods of psychological research", "fundamentals of mathematical statistics", which provide an understanding of psychological variables, the structure of empirical research and the basic principles of data analysis.

Postrequisites of the academic discipline. The knowledge and practical skills developed within the course are the basis for further study of applied and specialized psychological disciplines, in particular experimental, clinical, and social psychology, as well as for completing coursework and qualification papers, conducting independent scientific research, and carrying out professional activities as a psychologist related to the analysis, interpretation, and scientifically sound use of empirical data.

Software competencies:

General competencies	GC1. Ability to apply knowledge in practical situations. GC2. Ability to conduct research at an appropriate level. GC3. Ability to generate new ideas (creativity). GC8. Ability to develop and manage projects.
Special competencies	SK2. The ability to independently plan, organize and conduct psychological research with elements of scientific novelty and/or practical significance. SK3. The ability to select and apply valid and reliable methods of scientific research and/or evidence-based methodologies and techniques of practical activity. SK4. Ability to carry out practical activities (training, psychotherapeutic, consulting, psychodiagnostic and other depending on specialization) using scientifically verified methods and techniques. SK5. Ability to organize and implement educational and outreach activities for various categories of the population in the field of psychology. SK7. Ability to make professional decisions in difficult and unpredictable conditions, to adapt to new situations of professional activity. SK8. Ability to assess the limits of one's own professional competence and improve professional qualifications. SK9. The ability to adhere to the norms of professional ethics and be guided by universal human values in professional activities.
Learning outcomes	PRN1 Search, process, and analyze professionally important knowledge from various sources using modern information and communication technologies. PRN2 Be able to organize and conduct psychological research using valid and reliable methods. PRN4 Make a psychological forecast regarding the development of individuals, groups, and organizations.

	PRN8 Assess the degree of complexity of activity tasks and make decisions about seeking assistance or advanced training. PRN9 Resolve ethical dilemmas based on the law, ethical principles, and universal human values. PRN11 Adapt and modify existing scientific approaches and methods to specific situations of professional activity. PRN13 Organize and conduct rehabilitation measures for the psychological protection of citizens in crisis situations.

Content of the academic discipline

No.	Topic name	Number of hours, of which:			
		Lectures	Practical classes	Independent work	Teaching methods/assessment methods
1 semester **Content module 1. Theoretical approaches to using statistical methods for mathematical processing of psychological research data**					
Topic 1	Basic concepts of mathematical statistics.	2	1	6	Teaching methods: explanatory-illustrative, problem-solving methods using examples from real research, visualizations and comparative diagrams, discussion of basic concepts in the form of dialogue, performance of simple training exercises. Evaluation methods:ongoing survey, test control, completion of short written tasks to test understanding of the terms and logic of statistical thinking.
Topic 2	Statistical characteristics of the sample. Statistical distributions of the sample	2	2	6	Teaching methods:practically oriented methods, including problem solving, analysis of real data samples and construction of distributions using tables and graphs, independent work, work in small groups. Evaluation methods:verification of calculation work, individual tasks, tests with elements of data analysis.
Topic 3	Elements of variance analysis	2	1	6	Teaching methods:problem-oriented learning, analysis of typical research situations and step-by-step analysis of examples, case methods, computer presentations. Evaluation methods: insolving practical problems, tests with open questions, analysis of calculation results.

Topic 4	Correlation analysis in ordinal measurements	2	2	4	Teaching methods:Lecture presentation with practical exercises, analysis of empirical data and interpretation of results. Discussions and comparison of different correlation coefficients. Evaluation methods:calculation work, individual tasks, testing the ability to make well-founded conclusions.
Topic 5	Testing statistical hypotheses.	2	1	6	Teaching methods: dResearch approach, modeling of scientific situations and step-by-step analysis of the hypothesis testing procedure. Examples from real research, practical exercises. Evaluation methods: kcontrol works, tests and complex tasks that test the ability to apply methods in practical conditions.
Content module 2.Methodological foundations of using statistical methods for mathematical processing of psychological research data					
Topic 6	Correlation analysis methods. Sample research method	2	1	6	Teaching methods: dResearch approach, modeling of scientific situations and step-by-step analysis of the hypothesis testing procedure. Examples from real research, practical exercises. Evaluation methods: kcontrol works, tests and complex tasks that test the ability to apply methods in practical conditions.
Topic 7	Factor analysis. Cluster analysis.	2	2	6	Teaching methods:problem-oriented lectures. combination of theoretical explanation with computer practical work, analysis of multidimensional data and interpretation of results. Methods of project-based learning and independent analytical work. Evaluation methods:results of practical and project work, oral defense of the conclusions obtained.
Topic 8	Linear regression analysis.	2	1	4	Explanatory and analytical methods, problem solving, analysis of applied models. Interpretation of coefficients and assessment of model quality. Evaluation methods:testing, calculation tasks, individual work on the analysis of regression dependencies.

Topic 9	Using SPSS.	2	2	6	Teaching methods:Practical computer classes, step-by-step instructions, independent processing of data sets. Formation of practical skills in processing and analyzing information. Evaluation methods:is conducted on the basis of laboratory work, practical reports and demonstrations of the ability to interpret analysis results.
Topic 10	Student and Fisher distributions. Student and Fisher criteria	2	1	6	Teaching methods: nCombining theoretical presentation with graph analysis, solving practical problems and applying criteria in applied situations. Training exercises, computer calculations. Evaluation methods:tests, quizzes, and practical tasks to verify the correctness of the selection and application of criteria.
Modular test work					
Total:		**20**	**14**	**56**	
Form of control: credit					

Technical equipment and/or software

The educational process uses classrooms, a library, a multimedia projector and a computer for conducting lectures and seminars with presentation elements. Studying individual topics and completing practical tasks requires access to information from the World Wide Web, which is provided by a free Wi-Fi network.4.

Forms and methods of control

Monitoring the progress of students is divided into current and final (semester).

Current control is carried out during practical, laboratory and seminar classes, the purpose of which is to systematically check the understanding and assimilation of theoretical educational material, the ability to use theoretical knowledge when performing practical tasks, etc. The possibilities of current control are extremely wide: motivation for learning, stimulation of educational and cognitive activity, differentiated approach to learning, individualization of learning, etc.

Forms of student participation in the educational process that are subject to ongoing control:

- speech on the main issue;
- oral report;
- addition, question to the person answering;
- systematic work in seminar classes, activity during discussion of issues;
- participation in discussions, interactive forms of organizing classes;
- analysis of legislation and monographic literature;
- written assignments (tests, quizzes, creative works, essays, etc.);
- preparation of theses, abstracts of educational or scientific texts;
- independent study of topics.

Monitoring the progress of students is divided into current and final.

Methods of current control: oral control (survey, conversation, report, message, etc.); written control (test work, essay, presentation of material on a given topic in writing, etc.); combined control; presentation of independent work; observation as a control method; test control; problem situations.

Evaluation system and requirements

Table of distribution of points received by higher education applicants*

	Current knowledge control										**Modular test work**	**Credit**	**Total points**
Topics	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9	Topic 10	20	20	100
Work in a seminar class	3	3	3	3	3	3	3	3	3	3			
Independent work	3	3	3	3	3	3	3	3	3	3			

*****The table contains information about the maximum points for each type of academic work of a higher education applicant.

When assessing the mastery of each topic for current educational activities, the student is given grades taking into account the approved assessment criteria for the relevant discipline.

The criteria for assessing the learning outcomes of students and the distribution of points they receive are regulated by the Regulations on the Assessment of Academic Achievements of Students of Higher Education at PJSC "Higher Education Institution "MAUP".

Module control is carried out in the last lesson of the module in written form, in the form of testing.

Evaluation criteria for the modular test in the academic discipline "Modern Statistical Approaches in Psychological Research":

When evaluating a module test, the volume and correctness of the tasks are taken into account:

– The grade "excellent" (A) is given for the correct completion of all tasks (or more than 90% of all tasks);

– A “good” (B) grade is given for completing 80% of all tasks;

– A grade of “good” (C) is given for completing 70% of all tasks;

– a grade of “satisfactory” (D) is given for the correct completion of 60% of the proposed tasks;

– The grade “satisfactory” (E) is given if more than 50% of the proposed tasks are completed correctly;

– An "unsatisfactory" (FX) grade is given if less than 50% of the tasks are completed.

Failure to appear for a module test - 0 points.

The above scores are converted into rating points as follows:

“A” – 18–20 points;

"B" – 16–17 points;

“C” – 14–15 points;

"D" – 12–13 points.

"E" – 10–11 points;

"FX" - less than 10 points.

The final semester assessment in the discipline "Modern Statistical Approaches in Psychological Research" is a mandatory form of assessing student learning outcomes. It is conducted within the time frame specified in the curriculum and covers the scope of material specified in the course program.

The final assessment is carried out in the form of a test. A student who has completed all the required work is allowed to take the semester assessment.

The final grade is based on the student's performance during the semester. The student's grade consists of points accumulated from the results of the current assessment and incentive points.

Students who have completed all required assignments and received a score of 60 points or higher receive a grade corresponding to the grade received without additional testing.

For students who have completed all the required tasks but received a score below 60 points, as well as for those who wish to improve their score (result), the teacher conducts a final work in the form of a test during the last scheduled lesson in the discipline in the academic semester.

Evaluation of additional (individual) types of educational activities.Evaluation of additional (individual) types of educational activities. Additional (individual) types of educational activities include the participation of applicants in scientific conferences, scientific circles of applicants and problem groups, preparation of publications, participation in All-Ukrainian Olympiads and competitions and International competitions, etc. in excess of the tasks established by the relevant work program of the academic discipline.

By decision of the department, students who participated in research work and performed certain types of additional (individual) educational activities may be awarded incentive (bonus) points for a specific educational component.

Assessment of independent work

The total number of points received by a student for completing independent work is one of the components of academic success in the discipline. Independent work on each topic, in accordance with the course program, is evaluated in the range from 0 to 3 points using standardized and generalized knowledge assessment criteria.

Scale for evaluating the performance of independent work (individual tasks) evaluation criteria.

Maximum possible assessment of independent work (individual tasks)	Execution level			
	Perfectly	Good	Satisfactorily	Unsatisfactorily
3	3	2	1	0

Forms of assessment include: ongoing assessment of practical work; ongoing assessment of knowledge acquisition based on oral responses, reports, presentations and other forms of participation during practical (seminar) classes; individual or group projects requiring the development of practical skills and competencies (optional format); solving situational tasks; preparing summaries of independently studied topics; testing or written exams; preparing draft articles, conference abstracts and other publications; other forms that ensure comprehensive mastery of the curriculum and contribute to the gradual development of skills for effective independent professional (practical, scientific and theoretical) activity at a high level.

To assess the learning outcomes of a higher education applicant during the semester, a 100-point, national and ECTS assessment scale is used.

Final assessment scale: national and ECTS

Total points for all types of learning activities	**ECT8 assessment**	**National scale assessment**	
		for exam, course project (work), practice	**for credit**
90 – 100	AND	perfectly	Enrolled
82-89	IN	good	
75-81	WITH		
68-74	D	satisfactorily	
60-67	THERE		

35-59	FX	unsatisfactory with the possibility of reassembly	not passed with the possibility of retaking
0-34	F	unsatisfactory with mandatory re-study of the discipline	not passed with mandatory re-study of the discipline

Course policy

To successfully complete the course "Modern Statistical Approaches in Psychological Research", the student must:

– regularly attend lectures and practical classes;

– to work systematically, systematically and actively in lectures and practical classes;

– to make up for missed classes or unsatisfactory grades received in classes;

– to fully perform the tasks that the teacher requires to prepare, their quality is appropriate;

– perform control and other independent work;

– adhere to the norms of academic conduct and ethics.

The course "Modern Statistical Approaches in Psychological Research" involves mastering and adhering to the principles of ethics and academic integrity, in particular, focusing on preventing plagiarism in any of its manifestations: all works, reports, essays, abstracts and presentations must be original and authorial, not overloaded with quotations, and must be accompanied by references to primary sources. Violations of academic integrity are considered to be: academic plagiarism, self-plagiarism, fabrication, falsification, copying, deception, bribery, and biased evaluation.

The assessment of the student is focused on receiving points for activity in seminar classes, completing tasks for independent work, as well as completing tasks that are capable of developing practical skills and abilities for which, at the teacher's decision, additional (bonus) points may be awarded (participation in round tables, scientific conferences, olympiads and scientific competitions among students).

Recommended sources of information:

Main sources:

1. Vitchenko A.O. Theory and methods of scientific research in a higher military school: textbook. Kyiv: NUOU, 2020. 268 p.

2. Galyan I.M., Galyan O.I. Experimental Psychology. Textbook. Lviv: SPOLOM. 2023. 360 p.

3. Hudyma U. V., Hudyma O. V. Mathematical methods in psychology: basic concepts and examples: a textbook [Electronic resource]. Kamianets-Podilskyi: Kamianets-Podilskyi National University named after Ivan Ohienko, 2023. 150 p. URL: http://elar.kpnu.edu.ua:8081/xmlui/handle/123456789/6970

4. Moskaliev I.O., Lysenko D.P. Application of mathematical statistics methods in psychological and pedagogical research: a manual. Kyiv: NUOU, 2023. 187 p.

5. Probability theory and mathematical statistics in military problems: a textbook / Sokil B. I. et al. Lviv: NASV, 2020. 304 p.

Additional:

6. Bosnyuk V. F. Mathematical methods in psychology: course of lectures: multimedia educational edition. Kharkiv: NUCZU, 2020. 141 p.

7. Discursive construction of experience in the context of personality development: monograph / [N. V. Chepeleva, M. L. Smulson, S. Yu. Rudnytska, O. V. Zazimko, et al.]; edited by N. V. Chepeleva. Kyiv: G. S. Kostyuk Institute of Psychology, National Academy of Sciences of Ukraine, 2022. 194 p. ISBN 978-617-7745-14-2. URL: https://lib.iitta.gov.ua/731506/

8. Mathematical methods in psychology. Course of video lectures. URL:https://www.youtube.com/channel/UCu7Tj9z4NnyenGXmkvMGEnA/videos.

9. Ruska R.V.: Probability theory and mathematical statistics in psychology: textbook. Ternopil, 2020. 112 p.

10. Tatyanchikov A. O. Mathematical methods of psychology: lecture notes for higher education students in the specialty "053 Psychology". Odesa: National University "Odesa Law Academy", 2020. 79 p.

11. Hayes AF Statistical Methods for Communication Science. New York: Routledge, 2020. 536
12. Mertler CA, Vannatta RA, LaVenia KN Advanced and Multivariate Statistical Methods. Practical Application and Interpretation. New York: Routledge, 2021. 350 p.

Internet information resources

13. Video lecture: Pearson's linear correlation coefficient in SPSS, effect size https://www.youtube.com/watch?v=CJW-NlPlbGc (channel @Bosniuk).
14. Video lecture: Getting started with SPSS – a tutorial on learning SPSS https://www.youtube.com/watch?v=prkJe8ua5o4 (French).
15. Video lecture: Creating variables, entering data, and running descriptive statistics in SPSS https://www.youtube.com/watch?v=TZPyOJ8tFcI (English).
16. Video lecture: Factor analysis - stages of conducting https://www.youtube.com/watch?v=F1TPpQvBMHQ (channel Iryna Kryvenko @irynakryvenko7253).
17. www.nbuv.gov.ua– Vernadsky National Library of Ukraine.
18. http://upsihologa.com.ua/ – portal of professional psychologists of Ukraine “At the psychologist”
19. Library of psychological literature:http://psylib.kiev.ua
20. Ukrainian electronic library of textbooks. URL:http://pidruchniki.com.ua/
21. Psychological tests. URL:// https://www.healthyplace.com/psychological-tests