PJSC “HIGHER EDUCATION INSTITUTION
‘INTERREGIONAL ACADEMY OF PERSONNEL MANAGEMENT’”

МАУП

SYLLABUS
of the academic discipline
« MODERN STATISTICAL APPROACHES IN PSYCHOLOGICAL RESEARCH »

Speciality:	**C4 Psychology**
Educational level:	**Second (master's) level**
Study program:	**Psychology**

IAPM 2025

General information about the academic discipline

Name of the academic discipline	Modern statistical approaches in psychological research
Code(s) and name(s)	C4 Psychology
Specialty(s)	Psychology
Level of higher education	second (master's) level of higher education
Status of the discipline	selective
Number of credits and hours	3 credits/ 90 hours Lectures: 20 hours Seminars/practical classes: 14 hours Independent work: 56 hours
Terms of study of the discipline	
Language of instruction	Ukrainian
Type of final control	Credit

General information about the instructor. Contact information.

Full name of the instructor	
Academic degree	
Position	
Areas of scientific research	
Links to the registers of identifiers for scientists	
Contact information	
E-mail:	
Department phone	
Teacher's portfolio on the Institute's website	

Course Annotation. The course “Modern Statistical Approaches in Psychological Research” is designed to provide students with a comprehensive understanding of statistical analysis as an integral component of scientific psychological research, as well as to develop both theoretical and practical readiness to apply modern methods for processing and interpreting empirical data. The course covers the scientific and methodological foundations of statistics in psychology, its role within the system of psychological knowledge, and its connections to general, social, clinical, developmental, and experimental psychology. Significant attention is given to studying descriptive and inferential statistical methods, correlation and multivariate analysis, as well as modern approaches to hypothesis testing, effect size estimation, and the analysis of reliability and validity in

psychological measurements.

The course aims to cultivate professional thinking in future psychologists, enabling them to critically evaluate research findings, correctly interpret statistical indicators, and integrate quantitative data analysis methods into both scientific research and practical activities in accordance with contemporary scientific standards and principles of academic integrity.

Subject of Study:

- 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 interpreting and presenting statistical analysis results across various fields of psychology.

Course Objective: The course aims to develop students' system of theoretical knowledge and practical skills in applying modern statistical methods in psychological research, fostering the ability to independently process, analyze, and interpret empirical data while adhering to scientific standards, methodological rigor, and principles of academic integrity.

Course Tasks:

1. Introduce students to the theoretical and methodological foundations of statistical analysis in psychology.
2. Develop understanding of the main statistical methods used in psychological research.
3. Cultivate skills in selecting appropriate statistical procedures according to research objectives and sample characteristics.
4. Master techniques for analyzing, interpreting, and summarizing results of statistical processing of psychological data.
5. Foster the ability to critically evaluate statistical outcomes of research and correctly present them in scientific and applied works.

Prerequisites:

The study of the course "Modern Statistical Approaches in Psychological Research" is based on knowledge acquired in courses such as General Psychology, Personality Psychology, Social Psychology, Developmental Psychology, Psychodiagnostics, Methodology and Methods of Psychological Research, and Fundamentals of Mathematical Statistics, which provide an understanding of psychological variables, empirical research structure, and basic principles of data analysis.

Postrequisites:

The knowledge and practical skills gained in this course form the foundation for further study of applied and specialized psychological disciplines, including experimental, clinical, and social psychology, as well as for completing coursework and qualification projects, conducting independent research, and performing professional psychological activities involving the analysis, interpretation, and scientifically grounded use of empirical data.

Program competencies and learning outcomes:

General Competencies (GC)	GC1. Ability to apply knowledge in practical situations. GC2. Ability to conduct research at the appropriate level. GC3. Ability to generate new ideas (creativity). GC8. Ability to develop and manage projects.
Specific (Professional) Competencies (SC)	SC2. Ability to independently plan, organise and conduct psychological research with elements of scientific novelty and / or practical significance.

	SC3. Ability to select and apply valid and reliable methods of scientific research and / or evidence-based methods and techniques of practice. SC4. Ability to carry out practical activities (training, psychotherapeutic, counselling, psychodiagnostic and other depending on specialisation) using scientifically verified methods and techniques. SC5. Ability to organise and implement study and training activitis for different categories of the population in the field of psychology. SC7. Ability to make professional decisions in difficult and unpredictable conditions, to adapt to new situations of professional activity. SC8. Ability to assess the limits of their own professional competence and improve their professional qualifications. SC9. Ability to adhere to professional ethics in professional activities and be guided by universal values.
Program outcomes	ILO1 Search, process and analyse professionally important knowledge from various sources using modern information and communication technologies. ILO2 Be able to organise and conduct psychological research using valid and reliable methods. ILO4 Make a psychological forecast for the development of individuals, groups, organisations. ILO8 Evaluate the degree of complexity of the tasks of the activity and make a decision on seeking help or advanced training. ILO9 Solve ethical dilemmas based on the law, ethical principles and universal values. ILO11 To adapt and modify existing scientific approaches and methods to specific situations of professional activity. ILO13 Organise and conduct rehabilitation measures for psychological protection of citizens in crisis situations.

Content of the academic discipline:

№	**Topic name**	**Number of hours, of which:**			
		ectures	**ractical classes**	**ndependent work**	**Teaching methods/assessment methods**
1st semester **Content module I.**					**Teaching methods:** verbal (teaching lecture; conversation; educational discussion); inductive method; deductive method; translational method; analytical; synthetic; practical; explanatory-illustrative; reproductive; problem-based presentation method; partially-search; research; interactive methods (situation analysis; discussions, debates, polemics; dialogue, synthesis of thoughts;
Topic 1.	Basic Concepts of Mathematical Statistics	2	2	6	
Topic 2.	Sample Statistical Characteristics. Sample Distributions	2	2	6	
Topic 3.	Elements of Analysis of Variance (ANOVA)	2	1	6	
Topic 4.	Correlation Analysis for Ordinal Measurements	2	2	4	

					brainstorming; skills development; situational modeling, processing of discussion questions); modeling of professional activity; innovative teaching methods (competence; project-research); case method. **Assessment methods:** oral control (oral survey, assessment of participation in discussions, other interactive teaching methods); written control (control, independent work, essays); test control (closed-form tests: test-alternative, test-correspondence); method of self-control and self-assessment; case study evaluation.
Topic 5	Hypothesis Testing	2	1	6	
Modular test work					
Content module II.					
Topic 6	Methods of Correlation Analysis. Sampling Methods	2	1	6	
Topic 7	Factor Analysis. Cluster Analysis	2	1	6	
Topic 8	Linear Regression Analysis	2	1	6	
Topic 9	Using SPSS Software	2	2	4	
Topic 10	Student's t and Fisher's F Distributions. Student and Fisher Criteria	2	1	6	
Modular test work					
Total :		**20**	**14**	**56**	
Form of control: credit					

Technical equipment and/or software – official website of IAPM:

http://maup.com.ua 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 Internet, which is provided by a free Wi-Fi network.

Forms and methods of control.

Control of the success of students is divided into ongoing and final (semester).

Ongoing control is carried out during practical (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 ongoing control are extremely wide: motivation for learning, stimulation of educational and cognitive activity, a differentiated approach to learning, individualization of learning, etc.

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

-oral report;

- additions, questions to the person answering;

- systematic work in seminar classes, activity during the discussion of issues;

- participation in discussions, interactive forms of organizing classes;
- analysis of legislation and monographic literature;
- written tasks (tests, tests, creative works, essays, etc.);
- preparation of theses, summaries of educational or scientific texts;
- independent study of topics;
- control of the success of students is divided into ongoing and final.

Methods of ongoing 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.

Grading system and requirements.
Tale of distribution of points received by students

	Ogoing knowledge control										Modular tests	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 session	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 assignment.

When assessing the mastery of each topic for the current educational activity, the student is given marks 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 at PJSC "HEI "IAPM".

Modular control. Modular control work on the academic discipline "Modern statistical approaches in psychological research" is carried out in written form, in the form of testing, namely, closed-form tests: test-alternative, test-correspondence.

Criteria for evaluating the modular test work in the academic discipline "Modern statistical approaches in psychological research":

When evaluating the modular test work, the volume and correctness of the completed 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);
- the grade "good" (B) is given for the completion of 80% of all tasks;
- the grade "good" (C) is given for the completion of 70% of all tasks;
- the grade "satisfactory" (D) is given if 60% of the proposed tasks are completed correctly;
- the grade "satisfactory" (E) is given if more than 50% of the proposed tasks are completed correctly;
- the grade "unsatisfactory" (FX) is given if less than 50% of the tasks are completed.

Absence from the modular test work - 0 points.

The above grades are transformed 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 control in the academic discipline «Modern statistical approaches in psychological research» is a mandatory form of assessing the learning outcomes of a student. It is carried out within the time limits established by the educational process schedule and in the volume of educational material determined by the syllabus of the academic discipline.

The final control is carried out in the form of an exam. The student is admitted to the final control provided that he/she performed all types of work outlined in the syllabus.

The final (semester) grade of the discipline for which the exam is provided is formed from two components: the results (grade) of the ongoing control; exam grade.

The maximum number of points for the ongoing control is 60, for the examination is 40.

The minimum amount by which the exam is considered as passed is 25 points.

The grade for the ongoing control is formed as the sum of rating points received by the student during the seminars/practical classes and incentive (if provided) points.

After evaluating the student's answers on the exam, the professor summarizes the points received for the ongoing control measures and points for the exam to obtain the final grade for the course.

Scale for the assessment of Credit tasks

Scale	Total points	Criteria
Excellent level	30–40	The task is completed with high quality; the student has achieved the maximum score in the assessment of theoretical knowledge.
Good level	20–29	The task is completed with high quality and a sufficiently high proportion of correct answers.
Satisfactory level	10–19	The task is completed with an average number of correct answers; the student has demonstrated theoretical knowledge with significant errors.
Unsatisfactory level	0–9	The task is not completed; the student has demonstrated theoretical knowledge with major errors.

Assessment of additional (individual) types of educational activities. Additional (individual) types of educational activities include the participation of applicants in scientific conferences, scientific societies and problem groups, preparation of publications, etc. in excess of the tasks established by the relevant syllabus of the academic discipline.

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

Incentive points are not normative and are not included in the table of distribution of points received by students and the main scale of the assessment system.

One event can be the basis for setting incentive points only for one most relevant educational component.

The total number of points scored by students for completing tasks for independent work is one of the components of the academic performance in the academic discipline. Independent work on each topic according to the work program of the academic discipline is evaluated in the range from 0 to 2 points using standardized generalized knowledge assessment criteria.

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

The maximum possible assessment of independent work	Execution level			
	Excellent	Good	Satisfactory	Unsatisfactory

(individual tasks)				
3	3	2	1	0

Forms of control: ongoing control based on the performance of practical work; ongoing control of knowledge acquisition based on the assessment of oral answers to questions, messages, reports, etc. (in practical (seminar) classes); individual or collective project that requires the formation of practical skills and abilities of students (selective form); solving situational tasks; a summary made on the topic studied independently; testing, performing a written test; draft articles, speech abstracts and other publications, other forms that contribute to the full assimilation of the educational program and the consistent development of skills for effective independent professional (practical and scientific and theoretical) activity at a high level.

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

Summary assessment scale: national and ECTS

Total points for all types of learning activities	ECTS assessment	National scale assessment for credit, course project (work), internship	
		National scale assessment for credit, course project (work), internship	For pass/fail (credit)
90 – 100	A	excellent	pass
82 – 89	B	good	
75 – 81	C		
68 – 74	D	satisfactory	
60 – 67	E		
35 – 59	FX	unsatisfactory with the possibility of retaking	fail unsatisfactory with the possibility of retaking
0 – 34	F	unsatisfactory with mandatory re-study of the discipline	fail unsatisfactory with mandatory re-study of the discipline

Course Policy.

- regularly attend lectures and practical classes;
- work systematically and actively in lectures and practical classes;
- catch-up on missed classes;
- perform the tasks required by the syllabus in full and with appropriate quality;
- perform control and other independent work;
- adhere to the norms of academic behaviour and ethics.

The course " Modern statistical approaches in psychological research" involves mastering and adhering to the principles of ethics and academic integrity, in particular, orientation on preventing plagiarism in any of its manifestations: all works, reports, essays, abstracts and

presentations must be original and author's, not overloaded with quotes, which must be accompanied by references to primary sources. Violations of academic integrity are considered: academic plagiarism, self-plagiarism, fabrication, falsification, copying, deception, bribery, 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 can develop practical skills and abilities, for which additional (bonus) points can be awarded (participation in round tables, scientific conferences, scientific competitions among students).

Methodological support of the academic discipline

Teaching and methodological materials that provide support for the discipline: lecture notes, methodological recommendations for conducting practical (seminar) classes and methodological recommendations for independent work of higher education students in the academic discipline " Modern statistical approaches in psychological research".

Recommended sources of information

Primary sources:

1. Vitchenko, A.O. *Theory and Methodology of Scientific Research in Higher Military Education*. Textbook. Kyiv: NUOU, 2020. 268 p.

2. Halyan, I.M., Halyan, O.I. *Experimental Psychology*. Textbook. Lviv: SPOLON, 2023. 360 p.

3. Hudima, U.V., Hudima, O.V. *Mathematical Methods in Psychology: Basic Concepts and Examples*. Educational Manual [Electronic Resource]. Kamianets-Podilskyi: Kamianets-Podilskyi Ivan Ohienko National University, 2023. 150 p. URL: http://elar.kpnu.edu.ua:8081/xmlui/handle/123456789/6970

4. Moskaliov, I.O., Lysenko, D.P. *Application of Mathematical Statistics Methods in Psychopedagogical Research*. Educational Manual. Kyiv: NUOU, 2023. 187 p.

5. Sokol, B.I., et al. *Probability Theory and Mathematical Statistics in Military-Oriented Problems*. Educational Manual. Lviv: NASV, 2020. 304 p.

Additional sources:

6. Bosniuk, V.F. *Mathematical Methods in Psychology: Lecture Course*. Multimedia Educational Edition. Kharkiv: NUCZU, 2020. 141 p.

7. Chepeleva, N.V., Smulson, M.L., Rudnytska, S.Yu., Zazymko, O.V., et al. *Discursive Construction of Experience in the Context of Personality Development*. Monograph; edited by N.V. Chepeleva. Kyiv: H.S. Kostiuk Institute of Psychology, NAPS of Ukraine, 2022. 194 p. ISBN 978-617-7745-14-2. URL: https://lib.iitta.gov.ua/731506/

8. *Mathematical Methods in Psychology. Video Lecture Course.* 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. Tatianchikov, A.O. *Mathematical Methods in Psychology: Lecture Notes for Students of the Specialty "053 Psychology"*. Odesa: National University "Odesa Law Academy", 2020. 79 p.

11. Hayes, A.F. *Statistical Methods for Communication Science*. New York: Routledge, 2020. 536 p.

12. Mertler, C.A., Vannatta, R.A., LaVenia, K.N. *Advanced and Multivariate Statistical Methods: Practical Application and Interpretation*. New York: Routledge, 2021. 350 p.

Internet resources:

13. Video Lecture: Pearson Linear Correlation Coefficient in SPSS, Effect Size. URL: https://www.youtube.com/watch?v=CJW-NlPlbGc (channel @Bosniuk)

14. Video Lecture: Getting Started with SPSS – Tutorial for Learning SPSS. URL: https://www.youtube.com/watch?v=prkJe8ua5o4 (French language)

15. Video Lecture: Creating Variables, Entering Data, and Running Descriptive Statistics in SPSS.

URL: https://www.youtube.com/watch?v=TZPyOJ8tFcI (English language)
16. Video Lecture: Factor Analysis – Steps of Implementation. URL: https://www.youtube.com/watch?v=F1TPpQvBMHQ (channel Iryna Kryvenko @irynakryvenko7253)
17. National Library of Ukraine named after Vernadsky. URL: www.nbuv.gov.ua
18. Portal for Professional Psychologists of Ukraine "U Psyhologa". URL: http://upsihologa.com.ua/
19. Psychological Literature Library. URL: http://psylib.kiev.ua
20. Ukrainian Electronic Textbook Library. URL: http://pidruchniki.com.ua/
21. Psychological Tests. URL: https://www.healthyplace.com/psychological-tests