

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

Danube branch



SYLLABUS

of the academic discipline (selective)

ERGONOMICS

Specialty **D3 Management**

Educational level: **First (bachelor's) level**

Educational program: **Management**

General information about the academic discipline

Name of the discipline	Ergonomics
Code and name of specialty	D3 Management
Level of higher education	First (bachelor's) level
Discipline status	Selective
Number of credits and hours	3 credits / 90 hours. Lectures: 20 Seminars/practical classes: 14 Students' independent work : 56
Terms of study of the discipline	4 semester
Language of instruction	Ukrainian
Type of final control	D3 Management

General information about the teacher. Contact information.

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Academic degree	PhD in History
Position	Associate Professor of the Department of Social and Scientific Disciplines
Areas of scientific research	Historical and Cultural Foundations of the Formation of Civic Values and Security Culture in Modern Ukrainian Society
Links to the registers of identifiers for scientists	Google Scholar https://scholar.google.com.ua/scholar? ORCID: https://orcid.org/0000-0003-3257-7173
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Instructor's portfolio on the website	https://izmail.maup.com.ua/assets/files/dorosheva-portfolio-a.pdf

Discipline's description.

The discipline "Ergonomics" is aimed at studying the patterns of human interaction with technical systems and the environment in order to create the most comfortable, safe and efficient working conditions. In the conditions of the modern economy, where human capital is the main resource, knowledge of ergonomics becomes a tool for increasing productivity and maintaining the health of personnel.

The subject of the discipline is the regularities of formation and functioning of the system "man — technology — environment", as well as methods of optimization of labor activity by adapting technical means, work processes and working conditions to the psychophysiological and anthropometric characteristics of a person.

The aim of the discipline is to form a system of knowledge in future managers regarding the integrated design of workplaces that correspond to the psychophysiological and anthropometric characteristics of a person.

The objectives of the discipline is to systematically study the physiological and psychological capabilities of a person in order to design such workplaces and processes that ensure maximum labor productivity while fully preserving the health and comfort of the employee. This involves mastering the methods of ergonomic audit of the environment, training in ways to minimize professional fatigue and stress, as well as the development of practical recommendations for adapting modern technical means and digital interfaces to the needs user.

As a result of studying the selective educational component "Ergonomics", applicants must:

Know:

- theoretical foundations of ergonomics, its role in improving labor efficiency and maintaining the health of personnel;
- anthropometric, physiological and psychological characteristics of a person that affect interaction with the work environment;
- hygienic standards and requirements for the organization of lighting, microclimate and noise regime at workplaces;
- principles of cognitive ergonomics, in particular the peculiarities of information perception and the design of understandable interfaces;
- methods of preventing fatigue, stress and professional burnout in office and industrial conditions;
- requirements for the design of workplaces, including the specifics of remote work and Home Office.

Be able to:

- conduct an ergonomic audit of existing workplaces and identify factors that reduce labor productivity;
- apply methods for assessing the severity and intensity of the labor process to optimize work and rest regimes;
- develop recommendations for improving business processes by improving the ergonomic parameters of the working environment;
- use artificial intelligence tools to model and analyze the comfort of the workspace;
- substantiate the economic feasibility of investments in ergonomic support of the enterprise;
- evaluate the ergonomics of software and digital means of communication used in managerial activities.

Prerequisites for the discipline. The basis for the study of ergonomics in the fourth semester is knowledge of Economic Theory and Introduction to the specialty "Management", which lays down an understanding of the role of human resources in the economic system. Of great importance is the base on the Theory of Organizations and Management, where students have already familiarized themselves with the structure of enterprises and the general principles of managerial activity. In addition, for calculations and justification of ergonomic solutions, skills are used, obtained during the study of Higher

Mathematics and Statistics, and understanding of the legal boundaries of labor organization is provided by the preliminary study of Jurisprudence.

Post-requisites for the discipline. The knowledge gained within the course becomes the foundation for the study of HR Management and Foreign Economic Activity Management, where the ergonomics of the workspace is part of the HR management strategy. Competencies in labor organization are directly integrated into the courses of Operational Management and Logistics Management, where the efficiency of business processes depends on the rational design of human-machine systems. research in management in the final semester, providing an integrated approach to assessing the potential of the organization.

Content of the academic discipline

№	Topic name	Teaching Methods/Assessment Methods
Topic 1	Theoretical foundations and history of ergonomics development	<p>Teaching methods:</p> <ul style="list-style-type: none"> - use of visualizations and case studies (for example, analysis of the causes of professional fatigue). - carrying out anthropometric measurements and ergonomic audits of furniture or equipment of the branch. - development of the model of the "ideal manager's workplace" by students. - role-based modeling of human-machine interaction to identify cognitive errors. - application of artificial intelligence tools to analyze the ergonomics of software interfaces. <p>Assessment methods</p> <ul style="list-style-type: none"> - express testing using Google Forms or Kahoot after each lecture. - assessment of the student's ability to identify ergonomic risks in the provided photo or diagram of the workplace. - presentation of an ergonomic solution with an economic justification (for example, how changing furniture will increase productivity). - analysis by students of the ergonomics of their own home workplaces. - Final test: testing of theoretical knowledge and the ability to apply ergonomic standards in practice.
Topic 2	Anthropometric and biomechanical characteristics of a person	
Topic 3	Hygienic factors of the production environment	
Topic 4	Workplace ergonomics in office and production	
Topic 5	Psychophysiological aspects of work and cognitive ergonomics	
Topic 6	Work and rest regime. Fatigue management	
Topic 7	Safety ergonomics and workplace stress prevention	
Topic 8	Ergonomic design and expertise	
Topic 9	Social ergonomics and environmental design	
Topic 10	Modern trends: Ergonomics in the context of remote work and AI	
Module Assessment Task		
Final assessment: pass/fail (credit)		

Technical Equipment and Software.

For the effective study of the discipline "Ergonomics", which involves the analysis of modern workplaces and digital interfaces, appropriate material and software is needed.

Technical equipment

The educational process is provided by the use of a specialized auditorium equipped with multimedia tools for demonstrating visual materials on ergonomic design. For practical classes and audit of workplaces, personal computers (laptops) with Internet access, as well as measuring devices (tape measures, light meters) are used to assess the parameters of

illumination and anthropometric correspondence of furniture. Individual modules of the course involve the use of interactive whiteboards to simulate personnel movement patterns and the placement of equipment in office spaces.

Software

Office suites (Microsoft Office / Google Workspace): used to prepare reports on the results of ergonomic audits, calculate the cost-effectiveness of ergonomic solutions, and create presentations of individual projects.

Survey tools (Google Forms, Kahoot): used to collect subjective assessments of the comfort of the work environment and operational control of students' knowledge.

Specialized online planners (e.g. Planner 5D): for visualization and redesign of work areas taking into account ergonomic standards.

AI tools (Gemini, ChatGPT): are used to analyze the usability (UX/UI) of digital products, generate ideas for optimizing business processes, and model human-machine interaction scenarios.

Time tracking apps (Toggl, RescueTime): used in practical exercises to analyze work and rest patterns.

Forms and methods of assessment.

The system of assessment of students' knowledge in the discipline "Ergonomics" provides for a combination of current and final (semester) control, which allows you to comprehensively assess both theoretical training and practical skills of ergonomic design.

Current assessment is carried out systematically during practical classes and seminars. Particular attention is paid to the student's ability to diagnose ergonomic risks in workplaces, predict the level of professional fatigue and apply specialized software, including artificial intelligence tools, to model and analyze the parameters of the "human-technician-environment" system.

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

The participation of applicants is realized through active involvement in professional discussions and brainstorming sessions on the optimization of business processes. Students prepare presentations of analytical studies of ergonomics of modern offices, report on the results of case studies and defend the results of ergonomic audits. The written component includes the completion of test tasks (in particular in Google Forms/Kahoot), the preparation of analytical notes based on the results of anthropometric measurements, as well as taking notes and developing individual projects of the "ideal workplace".

Methods of ongoing assessment include: The methodological toolkit combines traditional and innovative forms of knowledge testing:

Oral methods: individual interviews, frontal questioning, and participation in debates on current trends in cognitive ergonomics.

Written and practical methods: reports on instrumental measurements (lighting, noise), calculation tasks to determine the economic efficiency of ergonomic improvements, construction of models of working areas in graphic planners.

Control over the results of activities: observation of activity during problem solving, checking presentations of individual projects and testing with open and closed types of tasks.

Grading system and requirements.
Table of distribution of points received by students*

Topics	Ongoing knowledge assessment						Final control		Total points
	Seminar 1 (Topic 1,2)	Seminar 2 (Topic 3,4)	Seminar 3 (Topic 5)	Seminar 4 (Topic 6,7)	Seminar 5 (Topic 8,9)	Seminar 6 (Topic 10)	Module assessment task	Pass /Fail	
Work in a seminar class	6	6	6	6	6	6	20	20*	100
Independent work	4	4	4	4	4	4			

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

Assessment Criteria and Procedure

Assessment of students' educational achievements is carried out in accordance with the current Regulations on Assessment in a Higher Education Institution.

Modular Assessment. Modular Assessment (MA) is carried out at the final lesson of each content block in the form of written testing.

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

- grade "excellent" (A) is given for the correct completion of all tasks (or more than 90% of all tasks);
- grade "good" (B) is given for completing 80% of all tasks;
- grade "good" (C) is given for completing 70% of all tasks;
- the grade "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 correctly completed;
- An "unsatisfactory" (FX) rating is given if less than 50% of the tasks are completed.
- Failure to appear for the unit 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 "Ergonomics" is a mandatory form of assessment of students' learning outcomes. It is carried out within the terms determined by the curriculum and covers the amount of material determined by the course program.

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

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

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

Evaluation of Additional (Individual) Educational Activities

Additional (individual) types of educational activities include the participation of applicants in the work of 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 scope of tasks that are established by the relevant work program of the academic discipline.

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

Assessment of independent work (Maximum — 4 points)

The total number of points received by a student for independent work is one of the components of academic success in the discipline. Independent work on each topic, according to the course program, is evaluated in the range from 0 to 4 points using standardized and generalized criteria for assessing knowledge.

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

Maximum possible assessment of independent work (individual tasks)	Execution level			
	Excellent	Good	Satisfactory	Unsatisfactory
4	4	3	2	0-1

Forms of assessment include: current assessment of practical work; current assessment of knowledge acquisition based on oral answers, reports, presentations and other forms of participation during practical (seminar) classes; individual or group projects that require the development of practical skills and competencies (optional format); solving situational problems; preparation of resumes on independently studied topics; testing or written exams; preparation of draft articles, conference abstracts and other publications; other forms that ensure a comprehensive assimilation of the curriculum and contribute to the gradual development of skills for effective independent professional (practical, scientific and theoretical) activities 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

Summary assessment scale: national and ECTS

Total points for all types of learning activities	ECTS assessment	National scale assessment	
		for exam, course project (work), internship	For pass/fail (credit)

90 – 100	A	excellent	pass
82 – 89	B	good	
75 – 81	C		
68 – 74	D	satisfactorily	
60 – 67	E		
35 – 59	FX	unsatisfactory with the possibility of reassembly	fail unsatisfactory with the possibility of retaking
0 – 34	F	unsatisfactory with mandatory re-study of the discipline	fail with mandatory re-study of the discipline

Discipline's Policy

Successful mastering of the educational component "Ergonomics" requires high self-discipline and a responsible attitude to the educational process from students. Prerequisites are regular attendance of lectures and practical classes, active participation in classroom work, as well as timely and high-quality performance of all types of independent and control tasks provided for by the program. In case of missing classes or obtaining unsatisfactory results, the student is obliged to liquidate academic debt by working out the relevant topics.

An integral part of education is strict adherence to the norms of academic ethics and culture of behavior. The educational process is based on the principles of academic integrity, which involves the exclusive independent performance of all written works, reports and presentations. Any borrowings of thoughts or texts of other authors should be accompanied by correct references to primary sources. Within the course of the course, any manifestations of academic dishonesty are unacceptable, including plagiarism, self-plagiarism, fabrication and falsification of data, cheating, deception, bribery or biased evaluation.

Recommended sources of information

Basic literature:

1. Labor Code of Ukraine: Law of Ukraine of December 10, 1971, No. 322-VIII (as amended in 2024–2026 regarding remote and home-based work). URL: <https://zakon.rada.gov.ua/laws/show/322-08>
2. On labor protection: Law of Ukraine of October 14, 1992, No. 2694-XII. URL: <https://zakon.rada.gov.ua/laws/show/2694-12>
3. DSTU EN ISO 6385:2024 (EN ISO 6385:2016, IDT; ISO 6385:2016, IDT). Ergonomic principles of designing working systems. Kyiv: SE "UkrNDNC", 2024. 28 p. (in Russian).
4. DSTU EN ISO 9241-11:2023 (EN ISO 9241-11:2018, IDT; ISO 9241-11:2018, IDT). Ergonomics of human-system interaction. Part 11. Suitability for use: definition and concept. Kyiv: SE "UkrNDNC", 2023. 35 p. (in Russian).
5. DSTU 7234:2011. Design and ergonomics. Production equipment. General design and ergonomics requirements. Kyiv: Derzhspozhyvstandart Ukrainy, 2011. 18 p. (in Russian).
6. DSanPiN 3.3.2.007-98. State Sanitary Rules and Norms of Work with Visual Display Terminals of Electronic Computers. URL: <https://zakon.rada.gov.ua/rada/show/v0007488-98>
7. Hygienic classification of labor by indicators of harmfulness and danger of factors of the production environment, severity and intensity of the labor process: Order of the

Ministry of Health of Ukraine of April 08, 2014, No. 248. URL: <https://zakon.rada.gov.ua/laws/show/z0472-14>

Additional literature:

1. Ergonomics: method. recommendations for studying the course for applicants for higher education at the I (bachelor's) level according to OPP 051 "Economics" / compendium. V. O. Lypchanskyi, T. V. Tushevska. Kropyvnytskyi: CSTU, 2021. 63 p. (in Russian).
2. Ergonomics: lecture notes for students of OPP "Transport Technologies" / T. V. Volobueva, V. M. Syrota. Odesa: ODABA Publ., 2020. 130 p. (in Russian).
3. Ergonomics and Ergodesign: Textbook / S. V. Semka. Kyiv: NAKKKiM, 2017. 603 p. (in Russian).
4. Fundamentals of Ergonomics: Teaching Aid. / O. M. Artyukh, O. V. Dudarenko, V. V. Kuzmin et al. Zaporizhzhia: NU "Zaporizhzhya Polytechnic", 2021. 168 p. URL: <http://eir.zntu.edu.ua/handle/123456789/8200>
5. Potapenko M. V. Fundamentals of Ergonomics, Bionics: Method. Recommendations for Practical Classes for Bachelor's Degree Applicants special. "Design". Zaporizhzhia: ZNU, 2018. 56 p. URL: <https://dspace.znu.edu.ua/jspui/bitstream/12345/5143/1/Потапенко%20-%20Основи%20ергономики%2С%20біоніка.pdf>
6. Shapurov O. O., Salamakha I. V. Diachronic Approach to Labor Ergonomics: Historical Evolution, Current Trends and Economic Aspects. *Bulletin of KSU. Series: Economic Sciences*. 2025. № 54. URL: <https://doi.org/10.32999/ksu2307-8030/2025-54-6>
7. Carayon P., Hancock P., Leveson N. Advancing human-centered design in socio-technical systems: The role of cognitive ergonomics. *Applied Ergonomics*. 2020. Vol. 84. P. 103027. URL: <https://doi.org/10.1016/j.apergo.2019.103027>
8. Ergonomics. *Merriam-Webster Dictionary*. URL: <https://www.merriam-webster.com/dictionary/ergonomics>
9. Marras W. S., Karwowski W. Interventions, controls, and applications in occupational ergonomics. *International Journal of Industrial Ergonomics*. 2021. Vol. 85. P. 103170. URL: <https://doi.org/10.1016/j.ergon.2020.103170>

Information resources:

1. International Ergonomics Association (IEA). URL: <https://iea.cc/>
2. Ergonomics for managers (Occupational Safety and Health Administration — OSHA). URL: <https://www.osha.gov/ergonomics>
3. Human Factors and Ergonomics Society (HFES). A leading resource with scientific articles and methodological recommendations on human-machine-environment interaction. URL: <https://www.hfes.org/>
4. ErgoPlus: Resource Center for Industrial Ergonomics. Platform with free risk assessment tools (REBA, RULA, NIOSH Lifting Equation). URL: <https://ergo-plus.com/>