

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

Danube branch



SYLLABUS

of the academic discipline (selective)

ECONOMIC INFORMATICS

Specialty **D3 Management**

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

Educational program: **Management**

General information about the academic discipline

Name of the discipline	Economic Informatics
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	5 semester
Language of instruction	Ukrainian
Type of final control	Pass/fail (credit)

General information about the teacher. Contact information.

Bodenchuk Pavlo Sergeevich	
Academic degree	None
Position	Lecturer of Economic Disciplines
Areas of scientific research	Information and analytical support for business process management in the context of digital transformation of the economy
Links to the registers of identifiers for scientists	ORCID: https://orcid.org/0009-0000-0640-7977
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Discipline's description.

The discipline "Economic Informatics" belongs to the cycle of professional training and is aimed at the formation of students' applied digital competence necessary for the effective management of a modern enterprise. The course combines the study of the theoretical foundations of information processes in economics with an in-depth practical mastery of data processing tools. The main emphasis is placed on the use of spreadsheet processors for financial modeling, working with databases, automation office procedures and information protection, which allows future specialists to turn large amounts of data into high-quality management decisions.

The subject of the discipline is information processes occurring in economic systems, as well as methods and software and hardware for collecting, accumulating, processing, storing and transmitting economic information to ensure the effective functioning of enterprises and organizations.

The aim of the discipline is to provide higher education students with systematic knowledge on the principles of building and functioning of economic information systems, as well as the formation of stable practical skills in using modern computer technologies to automate economic calculations, analyze business indicators and support managerial decision-making.

The objectives of the discipline are to master the theoretical foundations of informatization of society and the role of an information resource in the economy, to master the methodology of working with integrated packages of application programs for solving professional problems, in particular, to acquire skills in the professional use of spreadsheet processors for statistical analysis and forecasting. An important task is also to study the principles of designing and operating databases, mastering the tools computer graphics and data presentation, familiarization with information security technologies in computer networks, as well as the development of the ability to use global information resources and cloud services to organize effective business communication and electronic document management.

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

Know:

- structure, properties and classification of economic information;
- architecture and principles of functioning of economic information systems;
- functionality of spreadsheet processors (in particular MS Excel) for solving financial, statistical and optimization problems;
- basics of database theory, principles of relational data model and methods of working with DBMS;
- methods and means of ensuring information security of the enterprise, types of threats and methods of data protection;
- Modern trends in the development of the digital economy, cloud technologies and business intelligence systems.

Be able to:

- perform complex economic calculations using the built-in functions of spreadsheet processors;
- carry out statistical data processing, analysis of series of dynamics and construction of forecast models;
- to solve optimization problems (search for the optimal production plan, transport problem) by means of computer modeling;
- create and administer local databases, generate requests for selection and updating of information;
- visualize the results of the analysis using business graphics and pivot tables;
- use cloud services to collaborate on documents and projects.

Prerequisites for the discipline. Effective mastery of the discipline requires knowledge gained during the study of the courses "Higher Mathematics", "Economic

Theory", "Probability Theory", as well as "Statistics", "Management", "Macroeconomics" and "Finance, Money and Credit".

Post-requisites for the discipline. System knowledge and practical skills in working with information technologies obtained within the framework of this course are the necessary basis for further study of professional disciplines in senior courses. In particular, the tools of economic informatics will become the basis for the disciplines "Business Analytics" and "Investing" in the sixth semester. In the eighth semester, the acquired data processing skills will be useful when studying the courses "Fundamentals of Project Management" and "Fundamentals of Scientific Research in Management".

Content of the academic discipline

№	Topic name	Teaching Methods/Assessment Methods
Topic 1	Information as an economic resource	<p>Teaching methods:</p> <ul style="list-style-type: none"> – the educational process is based on a combination of lectures and laboratory work in computer classes. Lectures are held in the format of visualization lectures (demonstration of software functionality, data processing techniques) and problem lectures (selection of IT tools for business tasks). The practical component is implemented through the implementation of applied tasks on a PC aimed at automating economic calculations; – interactive methods are used to form digital and analytical competencies: the method of specific situations (case study) using real data sets, simulation modeling of economic processes (what-if analysis), work with cloud services for joint editing, as well as the implementation of individual analytical projects within the framework of independent work. <p>Assessment methods</p> <ul style="list-style-type: none"> – current control: defense of laboratory work, testing by content modules and assessment of an individual analytical task; – Modular control: written MCR – final control: a test in the form of a complex work that combines theoretical tests and a practical task on a PC.
Topic 2	Table processors in economics: financial analysis	
Topic 3	Fundamentals of Database Theory in Economics	
Topic 4	Statistical processing and forecasting of economic data	
Topic 5	Technologies for processing large data sets	
Topic 6	Modeling and optimization of economic processes	
Topic 7	Working with database management systems (DBMS)	
Topic 8	Computer Networking and Cloud Technologies in Business	
Topic 9	Information Security of Economic Systems	
Topic 10	Current trends: Big Data and Business Intelligence	
Module Assessment Task		
Final assessment: pass/fail (credit)		

Technical Equipment and Software.

The discipline is taught in specialized computer classes, where each workplace is equipped with a personal computer. For a visual demonstration of algorithms for working

with programs, multimedia equipment (projector, interactive whiteboard) is used. The educational process is provided by the necessary application software (MS Office packages: Excel, Access, PowerPoint or analogues), as well as access to the Internet for working with cloud services, online registries and open data sources.

Forms and methods of assessment.

The system of assessment of learning outcomes consists of current and final (semester) control. Current control is carried out systematically in laboratory classes and during the verification of independent work. Its purpose is to test theoretical knowledge and practical skills, including the ability to structure information, automate calculations, and use specialized software for financial modeling and data analysis.

The forms of assessment include:

- oral types of work: defense of laboratory work (explanation of calculation algorithms), presentation of the results of individual projects, participation in professional discussions on the choice of IT tools;
- written and practical types of work: performing computer tests, solving situational problems (case study) in the environment of spreadsheets and databases, preparing reports.

Methods of ongoing assessment combine express surveys, checking the correctness of constructed information models (files) and calculation formulas, as well as monitoring the activity of applicants when solving applied problem situations.

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 laboratory 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

The system of control of knowledge in the discipline is based on the requirements of the current "Regulations on the assessment of students' knowledge" and is implemented through a cumulative mechanism. This approach guarantees that all the achievements of the applicant during the semester are taken into account, including the quality of practical work, the results of modular control and participation in discussions, ensuring the transparency of the formation of the final grade.

Modular Assessment. Modular Assessment (MA) is carried out once a semester in the form of a comprehensive modular control work (MCR) after the completion of the study of the main educational material. The ICR aims to check the level of assimilation of theoretical knowledge and the ability to apply it in solving applied problems.

The structure of modular control work includes:

- Test tasks (to check the knowledge of terminology and understanding the functionality of the software).
- Practical task (to test the skills of independent work with data processing and economic modeling tools).

Criteria for evaluating the ICR:

- "Excellent" (90-100% points): the student provided correct answers to test questions, accurately completed the practical task, demonstrated a deep understanding of the tools and the ability to interpret the results obtained.
- "Good" (75-89% of points): the student generally coped with the tasks, but made insignificant inaccuracies in the answers or chose not the most rational way to solve a practical problem.
- "Satisfactory" (60-74% of points): the student has mastered the basic material, but made mistakes in tests or completed a practical task in violation of the algorithm (almost not in full).
- "Unsatisfactory" (less than 60% of points): the student was unable to answer most of the test questions, did not complete the practical task, or demonstrated a lack of skills in working with the software.

Assessment of independent work (Maximum — 4 points)

The applicant's independent work (doing individual homework, working on additional topics, analyzing cases) is evaluated based on the results of checking the completed tasks or defending them during practical classes.

4 points ("Excellent"). The applicant demonstrated a creative approach to the task, a deep understanding of the topic and the ability to independently choose the optimal software tools for solving the problem. The work was done flawlessly, the results obtained are correct, and solid conclusions were made.

3 points ("Good"). The task was completed in full, the calculation results were correct, but minor inaccuracies were made in the design of the work, data interpretation, or certain software functions were irrationally used (for example, cumbersome formulas instead of built-in functions).

2 points ("Satisfactory"). The work is completed, but contains significant shortcomings: errors in the use of formulas or functions that did not critically affect the final result; lack of analytical conclusions; violation of design requirements. Or the task was completed correctly, but handed over in violation of the established deadlines without a good reason.

0–1 point ("Unsatisfactory"). The task was not completed, performed fragmentarily (less than 50% of the volume), contains gross errors that led to incorrect results, or the fact of plagiarism (academic dishonesty) was revealed.

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

Evaluation of Additional (Individual) Educational Activities

To stimulate the creative activity of students and encourage in-depth study of modern information technologies, incentive (bonus) points are provided. Additional activities include activities performed in excess of the mandatory volumes of the work program.

1. Research and applied activities

Points are awarded for demonstrating the ability to use digital tools to solve non-standard tasks:

1. Participation in scientific and practical conferences and seminars on the problems of digital economy, information systems and technologies — 3-5 points.
2. Development of author's applied solutions (creation of complex templates of automated calculations in Excel, development of databases for the needs of the department/business, writing scripts/macros) — up to 6 points.
3. Participation in Olympiads in computer science, office technology, or hackathons — 5-10 points.
4. Analytical work with open data (Open Data): preparation of analytical reports with data visualization based on real datasets — up to 5 points.

2. Academic discipline and systematicity

According to the "Evaluation Regulations", incentive points are awarded for a high level of organization of work with the software and adherence to academic culture:

- attendance of all classes (lectures and laboratory) without absences — 3 points;
- high-quality systematization of lecture material (availability of a structured synopsis with algorithm schemes, description of function syntax and database models) — 2 points;
- independent mastery of additional software tools not provided by the basic program (for example, in-depth study of Power Query, Power Pivot or SQL basics add-ins) with a demonstration of skills - up to 4 points;
- Timely completion and defense of laboratory work (compliance with the established deadlines for submitting files) — 3 points.

Additional points are added to the student's current rating, while the total final grade for the discipline cannot exceed 89 points.

Final semester assessment Pass /Fail (Credit)

The final semester assessment (credit) is a mandatory stage of completing the study of the discipline "Economic Informatics". It can take place in the form of accumulating points (automatically) or by compiling a final test.

The form of final control is a test in the form of a written test, which may include a practical task on a PC. The final grade is set on the basis of the student's learning outcomes during the semester and consists of the sum of the points of the current control (defense of

laboratory work, independent work), the results of modular control and additional (incentive) points.

Students who have scored the required number of points (60 or more) during the semester and successfully defended all laboratory work provided for by the program have the right to receive credit automatically without passing a final test.

The procedure for forming an assessment:

Students who have completed all the tasks provided for by the work program during the semester (successfully defended laboratory work, completed independent tasks, passed a modular test work) and scored a total of 60 points or higher, receive a final grade "automatically" in accordance with the number of points scored without additional testing.

Students who have completed mandatory types of work (do not have academic arrears on laboratory work), but received a sum of points below 60, as well as those who want to improve their result (increase the rating score), take the final test in the form of a test (or a combined task on a PC) during the test lesson.

To assess the learning outcomes of a higher education applicant during the semester, a 100-point scale, a national scale and an ECTS scale are 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 "Economic Informatics" requires students to be systematic, technical attentive and responsible to practical work with software. Prerequisites are regular attendance at lectures and, especially, laboratory classes, active participation in the discussion of information processing methods, as well as timely and high-quality performance of all laboratory work and individual tasks. In case of missing classes or obtaining unsatisfactory results, the student is obliged to liquidate academic debt by practicing laboratory work and demonstrating PC skills to the teacher.

An integral part of education is strict adherence to the norms of academic ethics and digital culture. The educational process is based on the principles of academic integrity, which involves the exclusive independent performance of all calculation tasks, the construction of models and databases. Any use of external sources of information must be accompanied by correct references. Any manifestations of academic dishonesty are unacceptable within the course, in particular: presenting other people's files (spreadsheets,

databases) as your own, plagiarism, fabrication of calculation results, cheating during testing, deception or attempts to influence the objectivity of the assessment.

Recommended sources of information

Basic literature:

1. On electronic trust services: Law of Ukraine of 05.10.2017, No 2155-VIII. URL: <https://zakon.rada.gov.ua/laws/show/2155-19>
2. On electronic documents and electronic document management: Law of Ukraine of 22.05.2003, No 851-IV. URL: <https://zakon.rada.gov.ua/laws/show/851-15>
3. On Personal Data Protection: Law of Ukraine of 01.06.2010, No 2297-VI. URL: <https://zakon.rada.gov.ua/laws/show/2297-17>
4. Economic Informatics: Teaching Aid. / P. M. Hrytsyuk et al. Rivne: NUWGP, 2017. 311 p. URL: <http://ep3.nuwm.edu.ua/id/eprint/6757>.
5. Economic Informatics: Textbook / A. D. Fedunets et al. Kropyvnytskyi: CSTU, 2021. 210 p. URL: <https://dspace.kntu.kr.ua/handle/123456789/11060>.
6. Kobylin A. M. Systems of Economic Information Processing. Manual. Kyiv: CL, 2019. 234 p.
7. Protsenko N. M. Economic Informatics: Study. Manual. Kharkiv: DBTU, 2020. 212 p.
8. Silchenko M. V., Krasnyuk Y. M. Economic Informatics: Scientific Method. Manual for Self-Study Diss. / Ed. by O. D. Sharapova. Kyiv: KNEU, 2010. 601 p. URL: <https://ir.kneu.edu.ua/handle/2010/20414>.

Additional literature:

1. Vovk V., Gavrilchenko O., Cherkaskyi O. Influence of digitalization on the formation of marketing strategies of enterprises: the use of digital tools. Economy and society. 2025. № 72. DOI: <https://doi.org/10.32782/2524-0072/2025-72-1>.
2. Drugova O. S. Strategies for Increasing Competitiveness through Digital Technologies, Innovations and Sustainable Development. Eastern Europe: Economics, Business and Management. 2024. № 3 (44). Pp. 39–45
3. Economic Informatics: Method. Instructions for the Implementation of Laboratory Works for Applicants for the First (Bachelor) Level of Higher Education / compiled by G. L. Grinberg, Z. P. Konokhova. Kharkiv: NTU "KhPI", 2023. 54 p. URL: <https://repository.kpi.kharkov.ua/handle/KhPI-Press/71602>.
4. Oliynyk N., Mokrytska G., Roshchyn I. Application of Information Technologies in Modern Management. Measuring and computing devices in technological processes. 2021. № 1. Pp. 105–112 DOI: <https://doi.org/10.31891/2219-9365-2021-67-1-15>.
5. Shevchuk I., Fedoryshyna L., Shevchuk L. Information Technologies in Knowledge Management: Trends, Challenges and Prospects. Sustainable Development of the Economy. 2025. № 2 (53). Pp. 341–349 DOI: <https://doi.org/10.32782/2308-1988/2025-53-47>.
6. Yushchuk I., Ovcharuk V. Use of modern information and communication digital technologies in the process of teaching the academic discipline "Economic Informatics". Norwegian Journal of development of the International Science. 2022. № 96. Pp. 95–97. URL: <https://dspace.nuft.edu.ua/handle/123456789/41416>.

7. Bedianashvili G., Zhosan H., Lavrenko S. Modern digitalization trends of Georgia and Ukraine. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development". 2022. Vol. 22, Issue 3. URL: <https://managementjournal.usamv.ro/index.php/scientific-papers/current>.
8. Lebid O. V. Tsyfrova transformatsiia haluzei ekonomiky v Ukraini u voiennyi chas [Digital Transformation of Economic Sectors in Ukraine in Wartime]. Economics, Finance, Management: Current Issues of Science and Practice. 2022. No. 2 (60). P. 141–156. DOI: <https://doi.org/10.37128/2411-4413-202210>.
9. Rozvytok subiektiv ekonomichnoi diialnosti v umovakh tsyfrovoy ekonomiky [Development of Economic Entities in the Context of the Digital Economy] : Proceedings of the All-Ukrainian Scientific and Practical Conference. Kharkiv : O. M. Beketov NUUE, 2022.
10. Solona O. V. Zastosuvannia tsyfrovyykh tekhnolohii v ahrarnomu vyrobnytstvi [Application of Digital Technologies in Agricultural Production]. Equipment, Energy, Transport of the AIC. 2022. No. 3 (118). P. 19–25. DOI: <https://doi.org/10.37128/2520-6168-2022-3-3>.

Information resources:

1. Unified State Web Portal of Open Data: Official website. URL: <https://data.gov.ua> (dataset source for processing and modeling).
2. Ministry of Digital Transformation of Ukraine: official. website. URL: <https://thedigital.gov.ua> (regulatory framework and digitalization news).