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

Danube branch

SYLLABUS

of the academic discipline (selective)

SMART ECONOMY: OPTIMIZATION OF BUSINESS SOLUTIONS

Specialty **D3 Management**

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

Educational program: **Management**

IAPM 2025

General information about the academic discipline

Name of the discipline	**Smart economy: optimization of business decisions**
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	7 semester
Language of instruction	Ukrainian
Type of final control	Pass/fail (credit)

General information about the teacher. Contact information.

Akulyushina Maryna Oleksandrivna	
Academic degree	PhD in Economics
Position	Associate Professor
Areas of scientific research	Theoretical and methodological foundations of business planning, diagnostics and ensuring the stability of business structures in the face of risks
Links to the registers of identifiers for scientists	Google Scholar https://scholar.google.com/citations?user=ZWenFVIAAAAJ&hl=uk&oi=sra https://scholar.google.com.ua/citations?user=wVsOmcgAAAAJ&hl=ru ORCID: https://orcid.org/0000-0003-0230-4019 Web of Science ResearcherID: DKEH-9344-2024
Teacher's contact information:	
E-mail:	menedzmentuk@gmail.com
Contact phone number	+380677445957
Instructor's portfolio on the website	https://izmail.maup.com.ua/assets/files/akulyushina-portfolio-a.pdf

Discipline's description.

The discipline "Smart Economy: Optimization of Business Decisions" is aimed at forming a system of knowledge and applied skills for the quantitative justification of managerial decisions. The course reveals the methodology of economic and mathematical modeling as a tool for improving the efficiency of an enterprise in conditions of limited resources and market uncertainty.

In the process of studying the discipline, theoretical aspects and practical algorithms for solving optimization problems are considered: from the formation of a production program and management of logistics flows to minimization of economic risks. Particular

attention is paid to the use of modern information technologies and software for automation of calculations, analysis of the sensitivity of models and selection of optimal strategies for the behavior of business entities.

The subject of the discipline is the theoretical and methodological foundations, principles and practical tools of economic and mathematical modeling, which are used for quantitative substantiation of managerial decisions and optimization of the functioning of socio-economic systems.

The aim of the discipline is to form a system of special competencies in higher education applicants for the use of optimization methods and computer modeling tools to solve applied economic problems, increase the efficiency of using the resource potential of the enterprise and minimize risks in economic activity.

The objectives of the discipline are to master the methodology of modeling economic processes and acquire skills in the applied application of modern software tools for solving optimization problems. The study of the course involves the formation of students' skills to formalize management problems, carry out automated quantitative analysis of alternatives and justify effective business decisions on resource allocation and risk minimization in conditions of uncertainty.

As a result of studying the selective educational component "Smart economy: optimization of business decisions", applicants must:

Know:

- modern approaches to decision-making (Data-Driven Decision Making);
- methodology for allocating limited resources (raw materials, budget, time) to obtain maximum profit;
- algorithms for optimizing logistics flows and inventory management;
- principles of network planning for meeting deadlines in project management;
- the basics of game theory for choosing strategies for competitive behavior;
- methods of quantitative risk assessment when choosing investment directions.

Be able to:

- formulate an economic problem in the language of a mathematical model;
- find optimal plans for production and sale of products using the add-in "Solution Search" (Solver) in MS Excel;
- calculate the cheapest transportation routes and the optimal volume of stock orders;
- determine the critical path of the project and time reserves for optimization of work;
- justify the choice of a strategy for the development of an enterprise in conditions of conflict or uncertainty;
- defend their management decisions with reason, based on calculation data, and not on intuition.

Prerequisites for the discipline. The study of the discipline is based on the knowledge and competencies obtained during the mastering of the following mandatory

components: "Economic Theory", "Microeconomics", "Macroeconomics", "Higher Mathematics", "Digital Technologies in Management", "Statistics" and "Finance, Money and Credit".

Post-requisites for the discipline. The discipline are used during the mastering of the mandatory components of the eighth semester: "Fundamentals of Project Management", "Strategic Management of Enterprise" and "Fundamentals of Scientific Research in Management". The acquired knowledge is the basis for pre-graduation practice and preparation of the bachelor's qualification work, where students apply methods of economic and mathematical modeling and optimization algorithms to justify managerial decisions.

Content of the academic discipline

<table>
<tr><th>№</th><th>Topic name</th><th>Teaching Methods/Assessment Methods</th></tr>
<tr><td>Topic 1</td><td>Smart approaches to data-driven business decision-making</td><td rowspan="10">Teaching methods:
- The educational process involves a combination of lectures (review, problem, visualization lectures) and practical classes in the form of seminars-discussions.
- Interactive methods are widely used to form applied skills: case study, brainstorming, working in small groups, and performing analytical projects while working independently.
Assessment methods
Assessment is carried out according to the cumulative system and includes:
- current control: oral questioning, express testing, solving situational problems and defense of individual tasks;
- modular control: written modular control work (MCR) after the completion of content blocks;
- final control: exam/test (written work with theoretical and practical tasks).</td></tr>
<tr><td>Topic 2</td><td>Maximizing profits through assortment management and Product Mix</td></tr>
<tr><td>Topic 3</td><td>Optimization of the formulation and composition of products to minimize costs</td></tr>
<tr><td>Topic 4</td><td>Building efficient transport routes and supply chains</td></tr>
<tr><td>Topic 5</td><td>Smart inventory management and warehouse logistics without losses</td></tr>
<tr><td>Topic 6</td><td>Project Time Management and Network Planning Methods</td></tr>
<tr><td>Topic 7</td><td>Efficient allocation of human resources and tasks</td></tr>
<tr><td>Topic 8</td><td>Game models and strategies of behavior in a competitive environment</td></tr>
<tr><td>Topic 9</td><td>Risk Management and Algorithms of Action in Conditions of Uncertainty</td></tr>
<tr><td>Topic 10</td><td>Formation and balancing of an optimal investment portfolio</td></tr>
<tr><td colspan="3">Module Assessment Task</td></tr>
<tr><td colspan="3">Final assessment: pass/fail (credit)</td></tr>
</table>

Technical Equipment and Software.

Material and technical support of the educational process involves the use of specialized classrooms and library funds. Multimedia equipment (projector, computer) is used to visualize the educational material during lectures and seminars. Practical tasks and in-depth study of individual topics are provided by access to the Internet through free Wi-Fi coverage.

Forms and methods of assessment.

The system of assessment of applicants' knowledge includes current and final (semester) control.

Current assessment is carried out systematically during practical and seminar classes in order to check the level of assimilation of theoretical foundations, the formation of diagnostic and forecasting skills, as well as the ability to use specialized software for modeling and data analysis.

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

Students' participation in the educational process is realized through oral presentations, presentations of analytical research, reports on the results of case studies, as well as active involvement in professional discussions and brainstorming. The written component of the work includes the performance of control and test tasks, the preparation of analytical notes, abstracts and notes based on the materials of lectures and independent study.

Methods of ongoing assessment include: The methodological tools of control combine oral forms (surveys, interviews) and written types of work (reports, calculation tasks, building models). The assessment is also based on observing the activity of applicants in solving problem situations, checking the results of the presentation of individual projects, and conducting 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 "Smart Economy: Optimization of Business Solutions" is a mandatory form of assessment of students' learning outcomes. It is carried out within the terms specified in 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 "Smart Economy: Optimization of Business Solutions" requires high self-discipline and a responsible attitude to the educational process. 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. Hryhorkiv V. S., Hryhorkiv M. V. Optimization Methods and Models: Textbook. Chernivtsi: Chernivtsi Nats. Univ. Publ., 2016. 400 p. (in Russian).
2. Dorokhovych A. M., Dorokhovych V. V., Zinchenko T. I. Optimization of technological processes of the industry: textbook. Kyiv: Inkos, 2009. 392 p. (in Russian).
3. Ostapchuk T. P., Tkachuk G. Y., Vygovskyi V. G., Kushnirenko O. M. Management of the formation of a business model of the enterprise. Manual. Zhytomyr: Ruta, 2020. 268 p. (in Russian).
4. Skopenko N. S., Bovkun A. O., Petrenko O. Y. Optimization of Economic Solutions: Teaching Aid. Kyiv: NUFT ; IPDO, 2008. 80 p. URL: https://dspace.nuft.edu.ua/server/api/core/bitstreams/130a9085-c76c-4073-beef-461ddcf60dd3/content.
5. Fainzilberg L. S., Zhukovska O. A., Yakymchuk V. S. Theory of decision-making: textbook. Kyiv: Education of Ukraine, 2018. 246 p. URL: https://fainzilberg.irtc.org.ua/files/UCHEBNIK_TPR.pdf.

Additional literature:

1. Dergachev E. V., Fishchuk K. O. Methodical Approaches to the Analysis and Optimization of Business Processes. Effective Economy. 2020. № 11. URL: http://www.economy.nayka.com.ua/?op=1&z=8382. DOI: 10.32702/2307-2105-2020.11.99.
2. Dovba I. V., Soima S. Y. Features of optimization of management of business processes of enterprise and methods of their improvement. Economy and society. 2016. Vol. 6, pp. 130–133 (in Russian). URL: https://economyandsociety.in.ua/journals/6_ukr/22.pdf.
3. Chumak O. V., Levina M. V., Oleksienko B. M. Optimization of business processes of enterprises in the system of strategic management of innovation activity. Business Inform. 2024. № 1. Pp. 430–436 (in Russian). DOI: https://doi.org/10.32983/2222-4459-2024-1-430-436.
4. Kashchena N. B. Formation of Innovation Strategy for Management of Economic Activity of Trade Enterprise. Entrepreneurship and Innovations. 2020. Vol. 11-2. Pp. 37–43. DOI: https://doi.org/10.37320/2415-3583/11.24.
5. Bagley R. Formation and optimization of business processes at the enterprise. Sustainable development of the economy. 2018. № 3 (40). Pp. 83–92 (in Russian). URL: https://www.economdevelopment.in.ua/index.php/journal/article/view/139.
6. Chobitok V., Protsenko V., Gnatchenko E. Formation and optimization of business process management at enterprises of the production industry. Herald of Khmelnytskyi

National University. Economic Sciences. 2025. № 4 (344). Pp. 493–500 (in Russian). DOI: https://doi.org/10.31891/2307-5740-2025-344-4-68.
7. Dolgalova O., Spitsya R. Optimization of the system of managerial decision-making at the construction enterprise. Galician Economic Bulletin. 2023. № 1 (80). URL: https://galicianvisnyk.tntu.edu.ua/pdf/80/1130.pdf.
8. Pariy L. V., Kubrak A. O. Making managerial decisions at the enterprise. Scientific Bulletin of Uzhhorod National University. 2023. Vol. 47. Pp. 75–79 (in Russian). DOI: https://doi.org/10.32782/2413-9971/2023-47-13.

Information resources:

1. Verkhovna Rada of Ukraine. Legislation of Ukraine. URL: https://zakon.rada.gov.ua/laws/main/index (database of regulatory legal acts).
2. State Statistics Service of Ukraine. URL: https://www.ukrstat.gov.ua (statistical data on the activities of business entities).
3. Ministry of Economy of Ukraine. URL: https://www.me.gov.ua (state policy in the field of entrepreneurship, analytics).
4. Diia.Business. National online platform for entrepreneurs. URL: https://business.diia.gov.ua (cases, consultations, document templates).
5. National Bank of Ukraine. URL: https://bank.gov.ua (macroeconomic indicators: inflation, key policy rate, exchange rate).
6. Entrepreneurship and Export Development Office. URL: https://epo.org.ua (market analytics, export opportunities).