МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ХАРКІВСЬКИЙ НАЦІОНАЛЬНИЙ ЕКОНОМІЧНИЙ УНІВЕРСИТЕТ
ІМЕНІ СЕМЕНА КУЗНЕЦЯ

ЗАТВЕРДЖЕНО
на засіданні кафедри
фінансів і кредиту
Протокол № 16 від 21 серпня 2025 р.

ПОГОДЖЕНО
Проректор з навчально-методичної роботи
Каріна НЕМАШКАЛО

СИСТЕМИ ПІДТРИМКИ ПРИЙНЯТТЯ АНТИКРИЗОВИХ ФІНАНСОВИХ РІШЕНЬ

робоча програма навчальної дисципліни (РПНД)

Галузь знань	**D "Бізнес, адміністрування та право"**
Спеціальність	**D2 "Фінанси, банківська справа, страхування та фондовий ринок"**
Освітній рівень	**другий (магістерський)**
Освітня програма	**"Фінанси і кредит"**

Статус дисципліни	**вибіркова**
Мова викладання, навчання та оцінювання	**англійська**

Розробники:
к.е.н,
доцент — Марина БЕРЕСТ
к.е.н,
доцент — Світлана ЛЕЛЮК

Завідувач кафедри
фінансів і кредиту — Ірина ЖУРАВЛЬОВА

Гарант освітньої програми — Ірина ЖУРАВЛЬОВА

Харків
2025

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SIMON KUZNETS KHARKIV NATIONAL UNIVERSITY OF ECONOMICS

APPROVED
at the meeting the Department
of Finance and Credit
Protocol № 16 dated August 21, 2025

AGREED
Vice-rector for educational and methodical work
Karina NEMASHKALO

ANTI-CRISIS FINANCIAL DECISION SUPPORT SYSTEM

Program of the course

Field of Knowledge	**D «Business, Administration and Law»**
Specialty	**D2 «Finance, banking, insurance and stock market»**
Study cycle	**second (master's)**
Study programme	**«Finance and Credit»**
Course status	**Elective**
Language	**English**

Developers:
PhD in Economics,
Associate professor — Maryna BEREST

PhD in Economics,
Associate professor — Svitlana LELIUK

Head of the Department
of Finance and Credit — Iryna ZHURAVLYOVA

Head of Study Programme — Iryna ZHURAVLYOVA

Kharkiv
2025

INTRODUCTION

The academic discipline «Anti-crisis financial decision support systems» refers to the cycle of professional training, it belongs to the group of elective disciplines of training masters in the specialty D2 « Finance, banking, insurance and stock market ». The knowledge gained as a result of its study will help students solve a wide range of problems – from modeling of business processes of financial activity of business entities to support of anti-crisis financial decisions support by means of neural network modeling.

The purpose of studying the academic discipline «Anti-crisis financial decision support systems» is to form students' in-depth knowledge of the use of methods for quantifying various aspects of the financial activities of enterprises, as well as the acquisition of practical skills in the field of building and functioning of support systems for making anti-crisis financial decisions.

The objectives of the discipline «Anti-crisis financial decision support systems» are to study the main types of modern information support decision support systems, their application in financial activities and interpretation of the results for financial and managerial decisions, as well as mastering the skills of independent analysis, identification and evaluation of financial information using computer technology and software and mathematical systems.

The object of the discipline is the economic system and processes that reflect various aspects of managerial decision-making.

The subject of this discipline is the support system for making anti-crisis financial decisions on financial management of business entities, development of qualitatively new approaches to the organization of the work of financial services.

The learning outcomes and competencies that form the discipline are defined in Table 1.

Table 1

Learning outcomes and competencies formed by the discipline

Learning outcomes	Competencies
PR04	SC7, SC9
PR05	GC2, GC8
PR08	SC8, SC9
PR09	SC9
PR10	SC6, SC7

PR04. Search for, process, systematize and analyze information necessary for solving professional and scientific problems in the field of finance, banking, insurance and the stock market.

PR05. Communicate fluently in a foreign language orally and in writing on professional and scientific issues, present and discuss research results.

PR08. Be able to apply and manage innovative approaches in the field of finance, banking, insurance and the stock market.

PR09. Apply management skills in the field of finance, banking, insurance and stock market.

PR10. Carry out diagnostics and modeling of financial activities of economic entities.

SC6. Ability to apply interdisciplinary approaches in solving complex problems and issues in the field of finance, banking, insurance and stock market.

SC7. Ability to search, use and interpret information necessary for solving professional and scientific problems in the field of finance, banking, insurance and stock market.

SC8. Ability to apply innovative approaches in the field of finance, banking, insurance and stock market.

SC9. Ability to develop technical specifications for the design of information systems in the field of finance, banking, insurance and stock market.

GC2. Ability to communicate in a foreign language.

GC8. Ability to work in an international context.

COURSE CONTENT

Content module 1: Theoretical and methodological principles of using anti-crisis financial decision support systems

Topic 1. Fundamentals of crisis financial management and modeling of its business processes

1.1. The essence, parameters and factors of financial crises in the enterprise.

Prerequisites for the development of crisis phenomena in the activities of Ukrainian enterprises. Crisis as an economic category. Financial crisis. Parameters of the financial crisis. Factors leading to the emergence and development of financial crises.

1.2. The essence and types of anti-crisis financial management of the enterprise.

The place of anti-crisis financial management in the system of anti-crisis financial management of the enterprise. Subjects of crisis financial management. The content of the concept of «crisis financial management of the enterprise». Types of anti-crisis financial management of the enterprise.

1.3. Theoretical foundations of business process modeling.

The concept of business process. Types of business processes. Business engineering and its goals. Optimization of business processes and its types. Models used in the reengineering process. CASE - technologies. Concepts used in CASE tools. Structural approach in CASE-tools. SADT methodology. Basic rules of the SADT methodology. IDEF methodology and its main standards. Basic elements and concepts of IDEF0.

Topic 2. Technologies and systems of intellectual processing of statistical financial information and diagnostics of financial crises

2.1. Technologies for intellectual analysis of data

The essence of the concept of data mining (CDM). The main types of CDM tasks: classification, clustering, determination of associations, sequences and forecasting. Stages of the CDM process. Characteristics of statistical information and features of its processing. IT processing of statistical information.

2.2. Bankruptcy diagnosis as a tool of anti-crisis financial management.

The essence and approaches to the diagnosis of corporate bankruptcy. Features of application of empirical-inductive systems of indicators of financial diagnostics. Discriminant models for assessing the financial condition of domestic enterprises. The task of anti-crisis financial controlling. Anti-crisis strategy and enterprise structure. The structure of the plan of anti-crisis measures of the enterprise.

Topic 3. Intelligent forecasting systems in the development of anti-crisis measures

3.1. Features of financing anti-crisis measures at the enterprise.

Types and forms of rehabilitation. Types of capital requirements. Determination of the capital requirement to finance the acquisition of property, plant and equipment. Stages of calculating capital requirements for financing current assets. Algorithm for making a decision regarding the financing of anti-crisis measures at the enterprise. Content of the golden rule of financing. Balance remediation. Sources of the reorganization profit formation.

3.2. Intelligent systems for forecasting industry trends.

The structure and properties of neurons. The concept of a neural network and their construction theory. Classification of neural networks and their properties. Neural network formation. The choice of the structure of the neural network. Paradigms for learning neural networks. Algorithm for learning a neural network. Methods for optimizing neural network training. The use of neural networks in financial activities.

Topic 4. Information systems to support anti-crisis financial decisions

4.1. Historical prerequisites for the emergence of decision support systems (DSS)

Advantages of using computers in the decision-making process. Historical facts about the use of DSS in various fields of human activity. A variety of approaches to the definition of the essence of the concept of «decision support system».

4.2. Classification, structure and functions of the DSS

Approaches to the classification of DSS. The three main components of the DSS database, model database and software subsystem. Optimization and non-optimization models. The main functions of the DSS. The purpose of the development and implementation of DSS.

4.3. Modern IT technologies for business

Chat-bot technologies for processing financial information. Cloud services. Blockchain technologies. Big data - analysis.

Topic 5. Forecasting industry trends by anti-crisis financial decision support systems

5.1. Basic concepts of expert systems (ES).

History of the theory of expert systems. Unity of concepts «expert system» and «knowledge engineering». The importance of the ES for humanity. Areas of application of the ES. The main differences between DSS and ES. Research of the essence of the concept of «expert system».

5.2. Classification and structure of expert intelligent systems

The main varieties of the ES. Classification of the ES by the type of tasks to be solved, connections with real time, type of PC, degree of integration.

5.3. Stages of EU development.

Features of the organization of the ES. Level of expert support for decisions made by users. Objective prerequisites for the development of ES. Factors justifying the use of the ES.

The list of laboratory work for the discipline is given in Table 2.

Table 2

List of laboratory classes/tasks

Name of topics	Contents
Topic 1.	Laboratory work №1. Statistical analysis of the development of crisis phenomena in the Ukrainian economy
Topic 2.	Laboratory work № 2. Assessment of the probability of bankruptcy of an enterprise based on its financial statements
Topic 3.	Laboratory work № 3. Preparation of financial statements of enterprises after balance sheet rehabilitation in MS Excel
Topic 4.	Laboratory work 4. Support for anti-crisis financial decision-making by hierarchy analysis
Topic 5.	Laboratory work 5. Forecasting industry trends (based on student research)

The list of independent work in the discipline is given in Table 3.

Table 3

List of independent work

Name of topics	Contents
Topic 1.	Studying lecture material, preparing for a laboratory class. Performing an individual task «Statistical analysis of the development of crisis phenomena in the Ukrainian economy»
Topic 2.	Studying lecture material, preparing for a laboratory class. Performing an individual task «Assessment of the probability of bankruptcy of an enterprise»
Topic 3.	Studying lecture material, preparing for a laboratory class. Performing an individual task « Preparation of financial statements of enterprises after balance sheet rehabilitation »
Topic 4.	Studying lecture material, preparing for a laboratory class. Performing an individual task « Justifying the choice of financial decisions by hierarchy analysis »
Topic 5.	Studying lecture material, preparing for a laboratory class. Performing an individual task « Forecasting industry trends (based on student research)»

The number of hours of lectures,laboratory classes and independent work hours is given in the curriculum (technological card) for the discipline.

TEACHING METHODS

In the process of teaching the discipline, the following teaching methods are used to achieve certain learning outcomes and intensify the educational process:

Verbal (lecture (Topics 1-2), problematic lecture (Topic 4); lecture-dialog (Topics 3, 5).

Visual (demonstration (Topics 1 - 5).

Laboratory classes (laboratory work (Topics 1-5).

FORMS AND METHODS OF ASSESSMENT

The University uses a 100-point cumulative system for assessing the learning outcomes of students.

Current control is carried out during lectures and laboratory classes and is aimed at checking the level of readiness of the student to perform a specific job and is evaluated by the amount of points scored:

− for courses with a form of semester control as an exam: maximum amount is 60 points; minimum amount required is 35 points.

The final control includes current control and an exam.

Semester control is conducted in the form of a semester exam (examination). The semester exam (exam) is taken during the examination session.

The maximum amount of points that a higher education student can receive during an exam is 40 points. The minimum amount for which an exam is considered passed is 25 points.

The final grade in the discipline is determined by

- for disciplines with a form of semester control, an exam (examination) - by summing the points for current and final control.

The following control measures are used during the teaching of the discipline

performance of laboratory works and their defense - 40 points per semester;

current control work is a form of testing and evaluation of students' knowledge in the system of education in higher education institutions, the applicant can receive a total of 20 points.

Semester control: Grading including Exam (40 points).

More detailed information on the assessment system is provided in the technological card of the course.

An example of an exam card and assessment criteria.

An example of an exam card

Semen Kuznets Kharkiv National University of Economics
Second (master's) level of higher education
specialty D2 Finance, banking, insurance and stock market
educational program "Finance and Credit"
Academic discipline « Anti-crisis financial decision support systems »

EXAM CARD №1

Task 1 (stereotypical) - marks within 5 points

Describe the essence and approaches to the bankruptcy diagnosis, give examples of models for predicting the bankruptcy of enterprises.

Task 2 (diagnostic) - marks within 20 points.

According to the financial statements of the company, provided by the link **https://ukrenergymachines.com/investors/reports/131/8650**, assess the probability of its bankruptcy on the basis of the universal model of O. Tereshchenko. Provide detailed analytical conclusions, form and justify recommendations for maintaining a stable financial condition or financial recovery of the enterprise.

Task 3 (heuristic) - marks within 15 points.

Build a hierarchical model to support management decision-making.

The main purpose of using the method of hierarchical analysis is to increase the level of the financial potential of the enterprise. The analysis is carried out according to the criteria that characterize the possibilities of activating the reserves of the enterprise's financial resources, namely: interaction with external agents (K1); creditworthiness as a criterion for activating the financial potential of an enterprise (K2); level of financial stability (K3); the possibility of increasing financial potential through the use of financial resources (K4). Alternatives are increase in the share of equity capital (A1), attraction of resources from external sources (A2) and activation of reserves of financial resources (use of investment potential) (A3).

Pairwise comparison matrix of criteria importance

	K1	K2	K3	K4
K1	1	1/7	1/4	1/9
K2	7	1	3	1/2
K3	4	1/3	1	1/5
K4	9	2	5	1

Prioritizing alternatives for each of the criteria

The interaction with external agents			
	A1	A2	A3
A1	1	1/9	1/7
A2	9	1	3
A3	7	1/3	1
The creditworthiness as a criterion for activating the financial potential of an enterprise			
	A1	A2	A3
A1	1	1/9	1/3
A2	9	1	7
A3	3	1/7	1
The level of financial stability			
	A1	A2	A3
A1	1	7	3
A2	1/7	1	1/4
A3	1/3	4	1

The possibility of increasing financial potential through the use of financial resources			
	A1	A2	A3
A1	1	1/5	1/3
A2	5	1	3
A3	3	1/3	1

Approved at the meeting of the Department of Finance and Credit, protocol №___ of "__" _____20__.

Examiner PhD in Economics, Associate Professor Maryna Berest

Head of the Department Doctor of Economics, Professor Iryna Zhuravleva

Assessment criteria

Each exam card contains 3 tasks of different types of difficulty: stereotypical, diagnostic, and heuristic.

The final exam score consists of the sum of the scores for all tasks, rounded to the nearest whole number according to the rules of mathematics.

Examination papers are developed on the basis of a competency-based approach to test the level of knowledge, skills and abilities of students.

The examination task is performed in writing using the means of the personal learning system of HNUE named after S. Kuznets in the form of "Test".

Assessment criteria for stereotypical task 1 (5 points)

Score	Evaluation criteria
1	Key aspects of the question are not disclosed, the answer is incorrect, no answer is given.
2-3	The answer is given without methodological errors, the content aspects of the question are partially disclosed, the answer is incomplete or partially correct.
4-5	The correct answer is given without making methodological errors, the content aspects of the question are fully disclosed, explanations are provided and reasonable conclusions are drawn.

Assessment criteria for diagnostic task (20 points)

Score	Evaluation criteria
1-5	Simple initial formulas are given without any explanation, started calculations using the given formulas, there are mathematical errors in the calculations, the answer is incorrect, no answer.
6-10	Did not fully solve the problem according to the correct algorithm, gave some economic formulas with partial explanations, performed some actions with numbers correctly with a full explanation, answered some questions with partial explanations
11-15	The correct answer was obtained without methodological errors, a typical algorithm was used with partial explanation, without conclusions.
16-20	Performed all actions correctly according to the correct algorithm, proposed alternative algorithms for solving the problem, provided explanations for the calculations and made reasonable conclusions.

Assessment criteria for heuristic task 3 (15 points)

Score	Evaluation criteria
1-3	The student encounters difficulties in analyzing economic phenomena and processes, and demonstrates the ability to present ideas at an elementary level. The task contains significant mathematical errors, no conclusions and no correct answer.
4-6	The tasks show partial application of theoretical knowledge to solve the tasks. Simple initial formulas are given without any explanation, the student starts calculations using the given formulas, there are mathematical errors in the calculations, the answer is incorrect, there are no conclusions.
7-9	When performing tasks, the student applies the generalized knowledge of the educational material provided by the curriculum. Minor arithmetic errors are assumed, but the methodological approach to solving the problem is correct (i.e., inaccuracies in the calculation of certain indicators are assumed), a standard algorithm is used with partial explanation, and generalized conclusions are drawn.
10 - 12	Performed all the steps correctly according to the standard algorithm, but did not propose alternative algorithms for solving the problem, provided explanations for the calculations performed in full and made generalized conclusions.
13 - 15	The tasks are completed both using a standard algorithm and an independently developed algorithm. When performing tasks, the student applies systematic knowledge of the educational material, draws reasoned and justified conclusions about the results obtained. When answering the question, the logic, structure and style of presentation of the material are observed, the author's position on the problem under consideration is substantiated, and the main directions of its solution are given.

RECOMMENDED LITERATURE

Main

1. Anti-Crisis Management: State, Region, Enterprise. Collective monograph. Riga, Latvia: “Publishing House “Baltija Publishing”, 2020. 264 p.

2. Burstein F., Holsapple C. Handbook on Decision Support Systems. 2nd ed. Midtown Manhattan, New York City : Springer; Softcover reprint of the original, 2016. 852 p.

Additional

3. Лелюк С., Алексєєнко І., Полтініна О. Візуалізація даних в управлінні проектами фінансової сфери. *Економіка та суспільство*. 2021. Випуск #26/2021. URL: http://repository.hneu.edu.ua/bitstream/123456789/26119/1/2.pdf.

4. Проноза П. В., Лелюк С. В. Системи підтримки прийняття антикризових фінансових рішень : навчальний посібник. Харків : ХНЕУ ім. С. Кузнеця, 2019. 117 с. URL : https://repository.hneu.edu.ua/handle/123456789/21442

5. Сучасні інформаційні технології та системи [Електронний ресурс] : монографія / Н. Г. Аксак, Л. Е. Гризун, О. В. Щербаков [та ін.] ; за заг. ред. Пономаренка В. С. Харків : ХНЕУ ім. С. Кузнеця, 2022. 270 с. URL : http://repository.hneu.edu.ua/handle/123456789/29233

6. Aleksieienko I. Modeling business processes of making financial decisions using digital technologies / I. Aleksieienko, S. Leliuk. - Transformational economy:

theoretical and practical aspects : Collective monograph. Riga, Latvia: Baltija Publishing, 2024. P. 383-402. URL : http://www.repository.hneu.edu.ua/handle/123456789/35238

7. Berest, M., Sablina, N. Diagnosis of capital structure as a tool for administering the financial activities of enterprises. Economics of Development, 2022 № 21 (2). P/ 8-18. URL: https://doi.org/10.57111/econ.21(2).2022.8-18

8. Berest M., Sablina N. Evaluation of the effectiveness of strategic and tactical controlling based on the analysis of the company's financial reports. Development Management. 2024. 23(1). P. 8-18. URL: http://repository.hneu.edu.ua/handle/123456789/35284.

9. Berest M., Koiuda O. Analysis and diagnostics of crisis phenomena in the activities of Ukrainian enterprises. Municipal Economy of Cities. 2021 № 5 (165). Pp. 7-13. URL: https://khg.kname.edu.ua/index.php/khg/article/view/5848

10. Petroia A., Suvorova L. Improvement Of Anti-Crisis Management System Of An Enterprise. 2024, August 29. URL : http://dx.doi.org/10.2139/ssrn.4940653

Information resources

11. Educational materials by academic discipline "Anti-crisis financial decision support systems" on the website of personal learning systems of the S. Kuznets KhNUE. URL : https://pns.hneu.edu.ua/course/view.php?id=7990

12. State Statistics Service of Ukraine. URL : http://www.ukrstat.gov.ua

13. Ministry of Finance of Ukraine. URL: https://www.mof.gov.ua/uk/

13. National Bank of Ukraine. URL: https://bank.gov.ua