NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE

Department of Production and Investment Management

APPROVED
Faculty of Agricultural Management
"05" June 2025

CURRICULUM OF ACADEMIC DISCIPLINE
«INFORMATION TECHNOLOGY IN INVESTMENT MANAGEMENT»

Area of knowledge	07 Management and Administration
Specialty	073 «Management»
Academic programme	«Management»
Faculty (Education and Research Institute)	Agricultural Management
Developed by:	Chemodurov O., PhD of Economics, Associate Professor, Associate Professor of the Department of Production and Investment Management; Holieva M., PhD, Assistant of the Department of Production and Investment Management

Kyiv – 2025

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Department of Production and Investment Management

APPROVED
Dean of the Faculty of Agricultural Management
_____ Anatolii OSTAPCHUK
"05" __June 2025

APPROVED
at the meeting of the Department of Production and Investment Management
Minutes № 13, "28 " May 2025
Head of the Department____Tetiana VLASENKO

REVIEWED
Program Coordinator _____
_____ Vira BUTENKO

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Description of the discipline <u>Information technology in investment management</u>

(up to 1,000 printed characters)

The Information technology in investment management is a modern academic discipline aimed at equipping students with theoretical knowledge and practical skills in the use of digital tools and information systems for effective investment decision-making. The course covers the fundamentals of financial analytics software, database systems, risk modeling platforms, portfolio management applications, and AI-based investment forecasting technologies. Special attention is paid to automation of investment processes, blockchain applications in financial markets, and cybersecurity in investment activities. The discipline fosters competencies in data-driven decision-making, critical evaluation of IT solutions for investment tasks, and the ability to adapt to innovations in the financial technology (FinTech) sector. Upon completion, students will be able to integrate information systems into investment strategies and enhance the efficiency, transparency, and sustainability of investment management processes in both corporate and institutional settings.

Area of knowledge, specialty, academic programme, academic degree		
Academic degree	*bachelor's*	
Specialty	*073 «Management»*	
Academic programme	*Management*	
Characteristics of the discipline		
Type	Core	
Total number of hours	180	
Number of ECTS credits	6	
Number of modules	2	
Course project (work) (if any)	-	
Form of assessment	*екзамен*	
Indicators of the discipline for full-time and part-time forms of university study		
	University study	
	Full-time	**Full-time**
Year of study	4	
Term	8	
Lectures	*15 hours*	
Practical classes and seminars	*30 hours*	
Laboratory classes	-	
Self-study	*135 hours*	
Number of hours per week for full-time students	*3 hours*	

1. Aim, competences and expected learning outcomes of the discipline

The purpose of the discipline is providing students with the knowledge and skills to effectively manage projects using modern information technologies. Students will master the principles and practices of Scrum and Agile methodologies, as well as learn how to use MS Project to plan, monitor and control projects, which will allow them to successfully manage projects in various industries.

Competences acquired:

Integral competence (IC): he ability to solve complex specialized problems and practical problems characterized by complex and uncertain conditions in the field of innovation and investment management or in the learning process, which involves the use of theories and methods of social and behavioral sciences;

General competence (GC):

GC 8 Skills in the use of information and communication technologies.

GC 9. Ability to learn and master modern knowledge.

Special (professional) competence (SC):

SC 2. Ability to analyze the results of the organization's activities, compare them with the factors of influence of the external and internal environment.

SC 12. Ability to analyze and structure the problems of the organization, to formulate reasonable solutions.

Program learning outcomes (PLO):

PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions.

PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.

2. Programme and structure of the discipline

Names of content modules and topics	Number of hours								
	full-time					part-time			
	weeks	total	including			including	total		
			l	p	ind		l	p	ind
1	2	3	4	5	6	7	8	9	10
Module 1. Methodology of investment management with the help of information technologies									
Topic 1. Information technology as a foundation of information systems functioning	1	17	1	3	13				
Topic 2. Basic concepts and the role of information systems in management	2	17	1	3	13				
Topic 3. Project management information systems. Life cycle of project of informatization	3	17	1	3	13				
Topic 4. Use of information system life cycle standards	4	19	2	3	14				
Topic 5. Using information technology to analyze risks and identify opportunities	5-6	20	2	3	15				
Total for module 1	**90**		**7**	**15**	**68**				
Module 2. Modern IT tools in investment project management									
Topic 6. Organization of work in project	7	17	1	3	13				
Topic 7. Planning in informatization project management	8	17	1	3	13				
Topic 8. Control in informatization project management	9	18	2	3	13				
Topic 9. Project cost management	10	19	2	3	14				
Topic 10. Quality management of the informatization project	11-12	19	2	3	14				
Total for module 2	**90**		8	15	67				
Coursework			**-**	**-**	**-**				
Total hours	**180**		**15**	**30**	**135**				

3. Topics of lectures

No.	Topic	Hours
Module 1. Methodology of investment management with the help of information technologies		
1	Topic 1. Information technology as a foundation of information systems	1

	functioning	
2	Topic 2. Basic concepts and the role of information systems in management	1
3	Topic 3. Project management information systems. Life cycle of project of informatization	1
4	Topic 4. Use of information system life cycle standards	2
5	Topic 5. Using information technology to analyze risks and identify opportunities	2
Module 2. Modern IT tools in investment project management		
6	Topic 6. Organization of work in project	1
7	Topic 7. Planning in informatization project management	1
8	Topic 8. Control in informatization project management	2
9	Topic 9. Project cost management	2
10	Topic 10. Quality management of the informatization project	2
Total		15

4. **Topic of** laboratory (**practical,** seminars) classes

No.	Topic	Hours
Module 1. Methodology of investment management with the help of information technologies		
1	Topic 1. Information technology as a foundation of information systems functioning	3
2	Topic 2. Basic concepts and the role of information systems in management	3
3	Topic 3. Project management information systems. Life cycle of project of informatization	3
4	Topic 4. Use of information system life cycle standards	3
5	Topic 5. Using information technology to analyze risks and identify opportunities	3
Module 2. Modern IT tools in investment project management		
6	Topic 6. Organization of work in project	3
7	Topic 7. Planning in informatization project management	3
8	Topic 8. Control in informatization project management	3
9	Topic 9. Project cost management	3
10	Topic 10. Quality management of the informatization project	3
Total		30

5. Independent work

No.	Topic	Hours
Module 1. Methodology of investment management with the help of information technologies		
1	Topic 1. Information technology as a foundation of information systems functioning	23
2	Topic 2. Basic concepts and the role of information systems in management	23
3	Topic 3. Project management information systems. Life cycle of project of informatization	22
4	Topic 4. Use of information system life cycle standards	
5	Topic 5. Using information technology to analyze risks and identify opportunities	
Independent work module 1		68
Module 2. Modern IT tools in investment project management		
6	Topic 6. Organization of work in project	23
7	Topic 7. Planning in informatization project management	22
8	Topic 8. Control in informatization project management	22
9	Topic 9. Project cost management	
10	Topic 10. Quality management of the informatization project	

Independent work module 2	67
Total	135

6. Methods of assessing expected learning outcomes:

– oral or written survey;
– interview;
– test;
– defending practical, design works;
– peer-to-peer assessment, self-assessment.

7. Teaching methods *(select necessary or add):*

– problem-based method;
– practice oriented studying method;
– case method;
– project education method;
– flipped classroom, mixed education method;
– research based method;
– learning discussions and debates method;
– team work, brainstorm method.

8. Results assessment.

The student's knowledge is assessed by means of a 100-point scale converted into the national grades according to the "Exam and Credit Regulations at NULES of Ukraine" in force

8.1. Distribution of points by types of educational activities

Educational activity	Results	Assessment
Module 1. Methodology of investment management with the help of information technologies		
Lecture 1. Information technology as a foundation of information systems functioning	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions.	-
Practical work 1. Information technology as a foundation of information systems functioning	PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**10**
Lecture 2. Basic concepts and the role of information systems in management	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions.	-
Practical work 2. Basic concepts and the role of information systems in management	PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**10**
Lecture 3. Project management information systems. Life cycle of project of informatization	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions.	-
Practical work 3. Project management information systems. Life cycle of project of informatization	PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**10**
Lecture 4. Use of information system life cycle standards	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information	-

	and communication technologies to search, process, analyze and use information from various sources.	
Practical work 4. Use of information system life cycle standards	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**10**
Lecture 5. Using information technology to analyze risks and identify opportunities	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**-**
Practical work 5. Using information technology to analyze risks and identify opportunities	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**10**
Self-study 1		**20**
Module control work 1.		**30**
Total for module 1		**100**
Module 2. Modern IT tools in investment project management		
Lecture 6. Organization of work in project	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**-**
Practical work 6. Organization of work in project		**10**
Lecture 7. Planning in informatization project management	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**-**
Practical work 7. Planning in informatization project management		**10**
Lecture 8. Control in informatization project management	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**-**
Practical work 8. Control in informatization project management		**10**
Lecture 9. Project cost management	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**-**
Practical work 9. Project cost management	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information and communication technologies to search, process,	**10**

	analyze and use information from various sources.	
Lecture 10. Quality management of the informatization project	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	-
Practical work 10. Quality management of the informatization project	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions. PLO 21. Demonstrate the ability to use information and communication technologies to search, process, analyze and use information from various sources.	**10**
Self-study 2.		**20**
Module control work 2.		**30**
Total for module 2		**100**
Class work		**(M1 + M2)/2*0,7 ≤ 70**
Exam		**30**
Total for year		**(Class work + exam) ≤ 100**
Course project/work	-	**-**

8.2. Scale for assessing student's knowledge

Student's rating, points	National grading (exam/credits)
90-100	excellent
74-89	good
60-73	satisfactory
0-59	unsatisfactory

8.3. Assessment policy

Deadlines and exam retaking rules	works that are submitted late without valid reasons will be assessed with a lower grade. Module tests may be retaken with the permission of the lecturer if there are valid reasons (e.g. a sick leave).
Academic integrity rules	cheating during tests and exams is prohibited (including using mobile devices). Term papers and essays must have correct references to the literature used
Attendance rules	Attendance is compulsory. For good reasons (e.g. illness, international internship), training can take place individually (online by the faculty dean's consent)

9. Teaching and learning aids:

1. E-learning course «Information technology in investment management» discipline: https://elearn.nubip.edu.ua/enrol/index.php?id=4930

10. Recommended sources of information

1. Al Naqvi. Artificial Intelligence for Asset Management and Investment: A Strategic Perspective. Wiley, 2021. 288 p.
2. Alicia Vidler. Recommender Systems in Financial Trading: Using Machine-based Conviction Analysis in an Explainable AI Investment Framework. arXiv, 2024. 12 p.

3. Andrei-Dragoș Popescu, Cristi Spulbar. Financial Digital Assets and the Financial Risk Modeling of Portfolio Investments. IGI Global, 2025. 300 p.
4. Bokai Cao et al. From Deep Learning to LLMs: A Survey of AI in Quantitative Investment. arXiv, 2025. 25 p.
5. Igor Tulchinsky, Christopher E. Mason. The Age of Prediction: Algorithms, AI, and the Shifting Shadows of Risk. Wiley, 2023. 350 p.
6. Jian Guo et al. Quant 4.0: Engineering Quantitative Investment with Automated, Explainable and Knowledge-driven AI. arXiv, 2022. 15 p.
7. Karen G. Mills. Fintech, Small Business & the American Dream (2nd ed.). Palgrave Macmillan, 2024. 320 p.
8. Kate Crawford. Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence. Yale University Press, 2021. 336 p.
9. Mike Wright, Al Naqvi. Artificial Intelligence for Asset Management and Investment (audiobook). Wiley Ascent, 2021. 288 p.
10. Yves Hilpisch. Financial Theory with Python: Quantitative Finance for Programmers. O'Reilly Media, 2021. 400 p.
11. Educational and information portal of the NULES of Ukraine. URL: http://elearn.nubip.edu.ua/.
12. Asana: веб-сайт. URL: https://asana.com
13. Atlassian: веб-сайт. URL: https://www.atlassian.com
14. Trello: веб-сайт. URL: https://trello.com