

COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title Code INVESTMENT MANAGEMENT IN FINANCIAL MARKETS Code

Academic staff	Core academic unit(s) Vilnius University			
Coordinator :	Vilnius University			
Prof. Saulius Masteika	Kaunas Faculty			
	Institute of Social Sciences and Applied Informatics			
	Muitinės str. 8, LT-44280 Kaunas			

Study cycleType of the course unitSecond cycleElecttive, Individual Studies

Mode of deliverySemester or periodwhen it is delivered		Language of instruction
Face to face/Remote	Autumn semester	English

Requisites							
Prerequisites:	Co-requisites (if relevant):						
Economics, statistics	Previous studies: Mathematics, English, Information						
	technologies						

Number of ECTS credits allocated	Student's workload (total)	Contact hours	Individual work
5	130	34	96

Purpose of the course unit						
The aim of the course is- to acquire theoretical and practical knowledge about (i) financial markets and exchanges, trading in stock, currency, crypto and commodity markets (ii) trading financial instruments, derivatives (iii) intellectual methods for						
decision making in financial markets.						
Learning outcomes of the course unit	Teaching and learning methods	Assessment methods				
 Students should be able: to independently identify developments in the financial and economic environment and business sectors, and to adapt existing competences by using structured information and applying existing and newly acquired knowledge to organize securities trading and analytical activities in investment management departments of banks; brokerage firms, fintech companies. to apply automated decision support systems to identify potential investment markets and plan capital deployment to apply nonlinear and stochastic methods of technical analysis; the strategies based on fundamental analysis and behavioural finance to evaluate the risks and profitability trading classical and alternative financial instruments 	Lectures, practical tasks, self- study, group discussion, paper trading and portfolio management	Colloquium. Practical assignments. Evaluation of investment portfolio management. Examination.				

	Contact work hours					Individual work hours and tasks			
Course content: breakdown of the topics	Lectures	Consultations	Seminars	Practice classes	Laboratory	Practice	All contact work	Individual work	Tasks
Introductory lecture. Introduction to the course, assessment methods.	1						1		
Global financial markets and exchanges. Forex market. Commodity and derivative exchanges. Crypto centralized and decentralized exchanges.	1			2			3	10	Scientific literature review; Systematization and generalization of information; Practical tasks and individual work.
Financial instruments. Types of stocks, Debt securities, Futures, Options, Mutual funds, Swaps, ETF, CDS. Historical data standardization and quantitative analysis. Trading through on-line brokers, order types. Practical aspects of trading securities.	2			2			4	12	Scientific literature review; Systematization and generalization of information; Practical tasks and individual work; Paper trading in financial markets.
Fundamental analysis of financial markets. Analysis of financial indicators. Technological solutions for filtering and ranking of securities. Combining fundamental and technical analysis in decision making in financial markets.	1			1			2	10	Scientific literature review; Systematization and generalization of information; Practical tasks and individual work; Paper trading in financial markets.
Technical analysis. The basic principles and assumptions of technical analysis. Trading strategies based on technical analysis in financial markets. Indicators of technical analysis. Trend indicators. Oscillators. Market strength indicators. Chart patterns. Formalization of technical analysis indicators. On-line instruments for technical analysis. Graphical analysis of bistorical data chart types	4			4			8	12	Readings and practical tasks.
Preparation for colloquium and interim settlements								8	Preparation for mid- term settlements (lessons analysis, scientific literature analysis, reports preparation and presentation).
Intellectual methods for data analysis and securities ranking. Securities ranking techniques and algorithms. On-line technological solutions for data filtering. Nonlinear ranking techniques. Self-organizing networks and Kohonen clustering in financial markets. SOMine software use cases. AI in finance.	1			4			5	12	Scientific literature review; Systematization and generalization of information; Practical tasks and homeworks; Paper trading in financial markets.
Emotional intelligence and behavioral finance. Prospect theory. Neuroeconomy and neuro finance. Trading biases and intuition when trading markets. Sentiment indicators in financial markets and crowd	3			1			4	6	Scientific literature review; Systematization and generalization of

		Contact work hours							Individual work hours and tasks	
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behavior patterns. Commercial products related to behavioral finance. Behavioral finance and technical analysis.									information; Practical tasks and homework; Paper trading in financial markets.	
Blockchaintechnologyandcryptocurrencysolutions.Bitcoin and altcoins.Mining.Investment strategies.Blockchain and fintech solutions.Crypto payments.Smart contracts.	3			2			5	16	Scientific literature review; Systematization and generalization of information; Practical tasks and homework; Paper trading in financial markets.	
Consultation		2					2			
Preparing for the exam and exam								8	Preparing for exam (E)	
Exam								2		
Total	16	2		16			34	96		

Assessment	Weight, %	Deadline	Assessment criteria				
Practical work, (A1; A2- optional)*	40%	6 and 15 week	 Assessed are the following aspects: If practical tasks are completed (1,6 points) If practical tasks are summarized, conclusions written (1,6 points) If practical work quality meets the minimum paper work requirements (0,8) 				
Paper trading (PT)	10%	Paper trading during the semester. Assessment during the session	Assessed in grades 1-10 rating scale. Assessed the quality of the management of the investment portfolio (financial instruments, diversification, trading intensity). The results are compared with the SP500 index. (1 point). Assessed in grades 1-10 rating scale.				
Colloquium /Seminar, (K)	10%	According timetable	Mid-term exam covers the first lectures of theoretical material. A student is given three open questions with the same weight. The assessment takes place in written form, in-person (1 point). Assessed in grades 1-10 rating scale.				
Exam, (E)	40%	According timetable	The exam covers the theoretical material of lectures. A student is given three open questions with the same weight (33,3%). The assessment takes place in written form, in-person (4 point). Assessed in grades 1-10 rating scale.				

Final grade: **FG** = **A1*0,2+A2*0,2+PT*0,1+K*0,1+E*0,4**

* Guidance on the practical work: (i) the procedure for carrying out the practical work is set out in the descriptions of the practical work. In the defense of the practical work, students are required to submit typed reports and defend the work. Failure to defend the work in time will result in a 50 % reduction in the mark (no reduction in the mark if the date of the defense is agreed in advance with the lecturer).

In cases when the Assessment Strategy includes a written assignment (written work, research paper, project, etc.) and the Assessment Criteria do not include a defense or an oral presentation of the written work, the lecturer shall have the right to ask follow-up questions in order to make sure that no generative artificial intelligence (AI) tools (ChatGPT, etc.) were used by the student to prepare the assignment (i.e. the content of the work was not generated by AI tools) and, if necessary, to modify or

Assessment	Weight, %	6 Deadline	Assessment criteria					
strategy								
cancel the evaluation	of the work.							
For the external exan	nination, the	following formula is appl	ied: Fina	al grade = (Practical work	is done individually, and the			
report is prepared acco	ordingly (AI	and A2)) $*$ 0.5 + (Examina	tion grad	de) * 0.5.				
Evaluation strategy w	orking remot	tely the same as expected.						
Author	Year of public ation	Title	TitleIssue of a periodical or volume of a publication					
	1	Requir	ed read	ing	·			
S.Masteika, E.Rebždys, K.Driaunys, A.Šapkauskienė, A.Mačerinskienė, E.Krampas	2023	Bitcoin double-spending and countermeasures at p retail locations	g risk hysical	International Journal of Information Management, ISSN 0268-4012,	Elsevier			
Furneaux, N.	2018	Investigating Cryptocurr Understanding, Extractin Analyzing Blockchain Ev	encies: g, and idence		Wiley			
Charles D.Kirkpatric II, Julie R.Dahlquist	^{2k} 2016	Technical Analysis: The Complete Resource for Financial Market Technicians		3 rd Edition	FT Press			
Andreas M Antonopoulos, Olaoluwa Osuntoku Rene Pickhardt	4. 2022 n,	Mastering the Lightning Network: A Second Layer Blockchain Protocol for In Bitcoin Payments	r nstant	1 Edition	OʻReilly			
Mailund, Thomas	2017	Beginning Data Science in Data Analysis, Visualizati and Modelling for the Dat Scientist	n R: ion, a		Apress			
S.Masteika	2024	Intellectual systems in fina markets, e-conspectus	ancial		VU KnF			
Narayanan, A.	2016	Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction.			Oxford: Princeton University Press.			
Daniel Kahneman	2013	Thinking, Fast and Slow		Reprint edition	Farrar, Straus and Giroux			
Susanne Chishti, Jano Barberis	^{DS} 2018	The FinTech Book: The Financial Technology Har for Investors, Entrepreneu Visionaries	ndbook ırs and		Wiley			