

Subject card

Subject name and code	Cryptocurrencies and artificial intelligence: the future of finance, PG_00144000						
Field of study	Spanish and Portuguese Studies						
Date of commencement of studies	October 2024		Academic year of realisation of subject				
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Optional subject group		
Mode of study	full-time studies		Mode of delivery		e-learning		
Year of study	3		Language of instruction		Polish polish		
Semester of study	5		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Faculty of Law and Administration -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Edvardas Juchnevičius, prof. UG				
	Teachers		dr hab. Edvardas Juchnevičius, prof. UG				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 30.0						
	eNauczanie source address: https://mdl.ug.edu.pl/course/view.php?id=10894						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		0.0		20.0	50
Subject objectives	The aim of the course is to provide students with knowledge about the impact of cryptocurrencies and artificial intelligence on the financial market and finance in general. The course is designed to familiarize students with the regulatory, legal, economic, and technological aspects of applying cryptocurrencies and AI tools within the financial system, including in the areas of payment services, trading in financial instruments, and risk analysis. Participants will develop the ability to analyze technological solutions in terms of their compliance with applicable law and their potential implications for the financial sector and public administration.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
		The student is prepared to critically evaluate emerging financial technologies and formulate arguments regarding their use in business practice and public administration.	[SU1] oral statement/conversation/discussion
		The student is able to analyse the impact of artificial intelligence and cryptocurrencies on financial markets and assess their compliance with applicable legal regulations.	[SK5] implementation of a problem task
		The student knows the basic concepts and legal regulations concerning cryptocurrencies, blockchain technology, and artificial intelligence in the financial sector.	[SK4] test/exam - oral or written
		The student is able to identify legal, economic, and technological risks related to the use of cryptocurrencies and artificial intelligence in finance.	[SU1] oral statement/conversation/discussion
Subject contents	1. Introduction to Digital Technologies in Finance Characteristics of digital transformation in the financial sector Overview of fintech, regtech, and insurtech The role of data and automation in modern finance 2. Cryptocurrencies and Blockchain Technology Mechanisms of cryptocurrencies and distributed ledger technologies (DLT) Bitcoin, Ethereum, and other digital assets: functions, differences, limitations Smart contracts legal functions and practical applications Asset tokenization and digital property rights 3. Regulatory Aspects of the Cryptocurrency Market EU legal frameworks: MiCA, AML, PSD2, DORA Liability of intermediaries: exchanges, wallets, service providers Legal issues related to taxation, money laundering, and criminal liability 4. Artificial Intelligence in the Financial Sector Core types and functions of AI: machine learning, NLP, expert systems Applications of AI in financial services: credit scoring, risk management, compliance Algorithms and discrimination the problem of automated decision-making 5. Legal and Ethical Frameworks for AI in Finance AI Act and other EU regulatory initiatives for artificial intelligence AI ethics: transparency, accountability, oversight, algorithmic auditing Civil and administrative liability in the context of AI 6. Risk, Supervision, and Regulatory Compliance Analysis of technological and operational risks (regtech) Supervision mechanisms for the use of emerging technologies in banking and insurance Best practices for implementing compliance policies in institutions using AI and/or blockchain 7. The Future of Finance: Trends and Challenges DeFi, CBDCs, stablecoins emerging monetary models Regulatory challenges in response to rapid technological change Development scenarios and responsible oversight models		
Prerequisites and co-requisites	Basic knowledge of civil and commercial law (in particular, contract structures, contractual liability, and legal forms of business activity). Understanding of the general principles of the financial system and capital markets. Ability to read and interpret legal texts and use legal terminology appropriately.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	50.0%	100.0%

Recommended reading	Basic literature	K. Piech (red.), <i>Kryptowaluty i technologie blockchain wyzwania dla prawa i regulacji</i>, Uczelnia Łazarskiego, Warszawa 2021. A. Glapiak, M. Królikowski, <i>Sztuczna inteligencja w finansach. Uwarunkowania regulacyjne i etyczne</i>, Wolters Kluwer, Warszawa 2023. K. Gromek Broc, <i>MiCA. Nowe ramy regulacyjne dla rynku kryptowalut w UE</i>, Wolters Kluwer, Warszawa 2024. Regulation (EU) 2023/1114 on Markets in Crypto-assets (MiCA) tekst rozporządzenia wraz z motywami (dostępny online).
	Supplementary literature	J. Brynolf, M. Elsig (eds.), <i>AI and Financial Markets: Challenges, Regulation, and Governance</i>, Springer, 2022. B. Casey, <i>The Algorithmic Republic: Governing AI in the Financial Sector</i>, Oxford University Press, 2024.
	eResources addresses	
Example issues/ example questions/ tasks being completed	What is blockchain technology and what are its applications in finance? What are the assumptions and legal implications of the MiCA Regulation? Is a smart contract considered a contract under civil law? How does a credit scoring algorithm work, and what legal risks does it entail? Liability for harmful decisions made by AI systems in banking. The limits of automated credit decision-making in light of the GDPR and the AI Act. Is DeFi (decentralized finance) subject to AML obligations? Artificial intelligence and discrimination against loan applicants a practical analysis.	
Work placement	Not applicable	

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